COMMISSION REGULATION (EU) No 748/2012, of 3 August 2012

part-21

This pdf compiled June 14, 2019

Vihje: PDF readerissä "ALT" + "nuoli vasempaan" siirtää näkymän edelliseen näkymään. Ts jos seuraat linkkiä pääset takaisin tuolla näppäinyhdistelmällä.

Changes incorporated, last is the latest.

Commission regulation

change	date
COMMISSION REGULATION (EU) No 748/2012	3 August 2012
Commission Regulation (EU) No 7/2013	8 January 2013
Commission Regulation (EU) No 69/2014	27 January 2014
Commission Regulation (EU) 2015/1039	30 June 2015
Note: this is level Consolidated 748/2012 as issued November 2015	
Commission Regulation (EU) 2016/5	5 January 2016
Commission Regulation (EU) 2019/897 (changes valid from 23.6.2019)	12 March 2019

AMG & GM

Amd. No.	Decision	Effective date
AMC & GM to Part 21	Decision No. 2003/1/RM of the Executive Director of the Agency of 17 October 2003	17-10-2003
AMC & GM Part 21/1	Decision No. 2006/13/R of the Executive Director of the Agency of 20 December 2006	27-12-2006
AMC & GM Part 21/2	Decision No. 2007/008/R of the Executive Director of the Agency of 2 April 2007	03-04-2007
AMC & GM Part 21/3	Decision No. 2007/006/R of the Executive Director of the Agency of 4 April 2007	05-04-2007
AMC & GM Part 21/4	Decision No. 2007/012/R of the Executive Director of the Agency of 22 November 2007	29-11-2007
AMC & GM Part 21/5	Decision No. 2009/011/R of the Executive Director of the Agency of 24 August 2009	31-08-2009
AMC & GM Part 21/6	Decision No. 2010/001/R of the Executive Director of the Agency of 23 March 2010	30-03-2010
AMC & GM Part 21/7	Decision No. 2010/016/R of the Executive Director of the Agency of 16 December 2010	23-12-2010
AMC & GM Part 21/8	Decision No. 2011/006/R of the Executive Director of the Agency of 19 August 2011	26-08-2011
AMC & GM Part 21/9	Decision No. 2011/010/R of the Executive Director of the Agency of 1 December 2011	08-12-2011
Note: This is the level of consolidated version of 'AMC an GM to Part 21'(Annex 1 to Decision No 2012/020/R) (Issue 2 , 30 October 2012) incorporates also changes necessary to align this Agency Measure with Regulation (EU) 748/2012 of 3 August 2012.		
Corrigendum ro 2012/020/R		30 October 2012
ED Decision 2013/001/R	Part-21 / AMC Amendment 1 / GM Amendment 1 AMC & GM to Part-21 Amendment 1 to issue 2 - Implementation of CAEP/8	23/01/2013
ED Decision 2014/007/R	Part-21 / AMC Amendment 2 / GM Amendment 2 AMC & GM to Part 21 - Amendment 2 to Issue 2 - Operational Suitability Data (OSD)	31/01/2014
ED Decision 2015/016/R	AMC/GM to Part 21 – Issue 2, Amendment 3 CS for Standard Changes and Standard Repairs (CS-STAN) – Phase 1	09/07/2015
ED Decision 2015/026/R	AMC/GM to Part-21 - Issue 2, Amendment 4 Flight Testing	10/11/2015
ED Decision 2016/003/R	AMC/GM Part-21 - Issue 2, Amendment 5 Implementation of CAEP/9 amendments	12/01/2016
ED Decision 2016/007/R	AMC/GM to Part-21 -Issue 2, Amendment 6 Changes to operational suitability data (OSD)	26/04/2016
ED Decision 2019/003/R	AMC/GM to part 21 - Issue 2 Amendment 8	

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COMMISSION REGULATION (EU) No 748/2012

of 3 August 2012

laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations

(recast)

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (1), and in particular Articles 5(5) and 6(3) thereof,

Whereas:

(1) Commission Regulation (EC) No 1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (2) has been substantially amended several times (3). Since further amendments are to be made, it should be recast in the interests of clarity.

(2) Regulation (EC) No 216/2008 establishes common essential requirements to provide for a high uniform level of civil aviation safety and environmental protection. It requires the Commission to adopt the necessary implementing rules to ensure their uniform application. It establishes the 'European Aviation Safety Agency' (hereinafter referred to as the 'Agency') to assist the Commission in the development of such implementing rules.

(3) It is necessary to lay down common technical requirements and administrative procedures to ensure the airworthiness and environmental compatibility of aeronautical products, parts and appliances, subject to Regulation (EC) No 216/2008. Such requirements and procedures should specify the conditions to issue, maintain, amend, suspend or revoke the appropriate certificates.

(4) Organisations involved in the design and production of products, parts and appliances should be required to comply with certain technical requirements in order to demonstrate their capability and means to discharge their obligations and associated privileges. The Commission is required to lay down measures to specify conditions to issue, maintain, amend, suspend or revoke certificates attesting such compliance.

(5) In laying down measures for the implementation of common essential requirements in the field of airworthiness, the Commission must take care that they reflect the state of the art and the best practices, take into account worldwide aircraft experience and scientific and technical progress and allow for immediate reaction to established causes of accidents and serious incidents.

(6) The need to ensure uniformity in the application of common airworthiness and environmental requirements for aeronautical products, parts and appliances requires that common procedures be followed by the competent authorities of the Member States and, where applicable, the Agency to assess compliance with these requirements. The Agency should develop certification specifications and guidance material to facilitate the necessary regulatory uniformity.

(7) It is necessary to recognise the continuing validity of certificates issued before the entry into force of Regulation (EC) No 1702/2003, in accordance with Article 69 of Regulation (EC) No 216/2008.

(8) In order to maintain a high uniform level of aviation safety in Europe, it is necessary to introduce changes to requirements and procedures for the certification of aircraft and related products, parts and appliances and of design and production organisations, in particular to elaborate the rules related to the demonstration of compliance with the type-certification basis and environmental protection requirements and to introduce the possibility to choose to comply with later standards for changes to type-certificates.

(9) The concept and complexity of auxiliary power units (APU) resembles that of aircraft engines and in some cases APU designs are even derived from engine designs. Changes to provisions for repairs to APU are therefore needed to restore consistency with repairs process to engines.

(10) In order to subject non-complex motor-powered aircraft, recreational aircraft and related products, parts and appliances to measures that are proportionate to their simple design and type of operation, while maintaining a high uniform level of aviation safety in Europe, it is necessary to introduce changes to requirements and

procedures for the certification of those aircraft and related products, parts and appliances and of design and production organisations and in particular, for the owners of European Light Aircraft below 2 000 kg (ELA2) or below 1 200 kg (ELA1), to introduce the possibility to accept certain not safety critical parts for installation without an EASA Form 1.

(11) The Agency prepared draft implementing rules and submitted them as opinions No 01/2009 on 'Possibility to deviate from airworthiness code in case of design changes', No 02/2009 on 'Repair and design changes to European Technical Standard Order', No 01/2010 on 'SubPart J DOA' and Opinion No 01/2011 on 'ELA Process and "standard changes and repairs"' to the Commission in accordance with Article 19(1) of Regulation (EC) No 216/ 2008.

(12) The measures provided for in this Regulation are in accordance with the opinion of the European Aviation Safety Agency Committee established by Article 65(1) of Regulation (EC) No 216/2008,

HAS ADOPTED THIS REGULATION:

Articlas

Article 1

Scope and definitions

1. This Regulation lays down, in accordance with Article 5(5) and Article 6(3) of Regulation (EC) No 216/2008, common technical requirements and administrative procedures for the airworthiness and environmental certification of products, parts and appliances specifying:
   (a) the issue of type-certificates, restricted type-certificates, supplemental type-certificates and changes to those certificates;
   (b) the issue of certificates of airworthiness, restricted certificates of airworthiness, permits to fly and authorised release certificates;
   (c) the issue of repair design approvals;
   (d) the showing of compliance with environmental protection requirements;
   (e) the issue of noise certificates;
   (f) the identification of products, parts and appliances;
   (g) the certification of certain parts and appliances;
   (h) the certification of design and production organisations;
   (i) the issue of airworthiness directives.
2. For the purpose of this Regulation, the following definitions shall apply:
   (a) 'JAA' means the 'Joint Aviation Authorities';
   (b) 'JAR' means 'Joint Aviation Requirements';
   (c) 'Part 21' means the requirements and procedures for the certification of aircraft and related products, parts and appliances, and of design and production organisations laid down in Annex I to this Regulation;
   (d) 'Part M' means the applicable continuing airworthiness requirements adopted in pursuance of Regulation (EC) No 216/2008;
   (e) 'principal place of business' means the head office or registered office of the undertaking within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised;
   (f) 'article' means any part and appliance to be used on civil aircraft;
   (g) 'ETSO' means European Technical Standard Order. The European Technical Standard Order is a detailed airworthiness specification issued by the European Aviation Safety Agency (the 'Agency') to ensure compliance with the requirements of this Regulation as a minimum performance standard for specified articles;
   (h) 'EPA' means European Part Approval. European Part Approval of an article means the article has been produced in accordance with approved design data not belonging to the type-certificate holder of the related product, except for ETSO articles;
   (i) 'ELA1 aircraft' means the following manned European Light Aircraft:
      (i) an aeroplane with a Maximum Take-off Mass (MTOM) of 1 200 kg or less that is not classified as complex motor-powered aircraft;
      (ii) a sailplane or powered sailplane of 1 200 kg MTOM or less;
      (iii) a balloon with a maximum design lifting gas or hot air volume of not more than 3 400 m3 for hot air balloons, 1 050 m3 for gas balloons, 300 m3 for tethered gas balloons;
      (iv) an airship designed for not more than 4 occupants and a maximum design lifting gas or hot air volume of not more than 3 400 m3 for hot air airships and 1 000 m3 for gas airships;
   (j) 'ELA2 aircraft' means the following manned European Light Aircraft:
      (i) an aeroplane with a Maximum Take-off Mass (MTOM) of 2 000 kg or less that is not classified as complex motor-powered aircraft;
      (ii) a sailplane or powered sailplane of 2 000 kg MTOM or less;
      (iii) a balloon;
      (iv) a hot air airship;
      (v) a gas airship complying with all of the following characteristics:
         - 3 % maximum static heaviness,
         - Non-vectored thrust (except reverse thrust),
         - Conventional and simple design of: structure, control system and ballonet system,

- Non-power assisted controls;

(vi) a Very Light Rotorcraft.

Article 2

Products, parts and appliances certification

1. Products, parts and appliances shall be issued certificates as specified in Annex I (Part 21).
2. By way of derogation from point 1, aircraft, including any installed product, part and appliance, which are not registered in a Member State shall be exempted from the provisions of Subparts H and I of Annex I (Part 21). They shall also be exempted from the provisions of Subpart P of Annex I (Part 21) except when aircraft identification marks are prescribed by a Member State.

Article 3

Continued validity of type-certificates and related certificates of airworthiness

1. With regard to products which had a type-certificate, or a document allowing the issuing of a certificate of airworthiness, issued before 28 September 2003 by a Member State, the following provisions shall apply:

(a) the product shall be deemed to have a type-certificate issued in accordance with this Regulation when:

(i) its type-certification basis was:

- the JAA type-certification basis, for products that have been certificated under JAA procedures, as defined in their JAA data sheet, or
- for other products, the type-certification basis as defined in the type-certificate data sheet of the State of design, if that State of design was:
  - a Member State, unless the Agency determines, taking into account, in particular, certification specifications used and service experience, that such type-certification basis does not provide for a level of safety equivalent to that required by Regulation (EC) No 216/2008 and this Regulation, or
  - a State with which a Member State had concluded a bilateral airworthiness agreement or similar arrangement under which such products have been certificated on the basis of the certification specifications of that State of design, unless the Agency determines that such certification specifications or service experience or the safety system of that State of design do not provide for a level of safety equivalent to that required by Regulation (EC) No 216/ 2008 and this Regulation.

The Agency shall make a first evaluation of the implication of the provisions of the second indent in view of producing an opinion to the Commission including possible amendments to this Regulation;

(ii) the environmental protection requirements were those laid down in Annex 16 to the Chicago Convention, as applicable to the product;

(iii) the applicable airworthiness directives were those of the State of design;

(b) the design of an individual aircraft, which was on the register of a Member State before 28 September 2003, shall be deemed to have been approved in accordance with this Regulation when:

(i) its basic type design was part of a type-certificate referred to in point (a);

(ii) all changes to this basic type design, which were not under the responsibility of the type-certificate holder, had been approved; and

(iii) the airworthiness directives issued or adopted by the Member State of registry before 28 September 2003 were complied with, including any variations to the airworthiness directives of the State of design agreed by the Member State of registry.

2. With regard to products for which a type-certification process was proceeding through the JAA or a Member State on 28 September 2003, the following shall apply:

(a) if a product is under certification by several Member States, the most advanced project shall be used as the reference;

(b) points 21.A.15(a), (b) and (c) of Annex I (Part 21) shall not apply;

(c) by way of derogation from point 21.A.17A of Annex I (Part 21), the type-certification basis shall be that established by the JAA or, where applicable, the Member State at the date of application for the approval;

(d) compliance findings made under JAA or Member State procedures shall be deemed to have been made by the Agency for the purpose of complying with points 21.A.20(a) and (d) of Annex I (Part 21).

3. With regard to products that have a national type-certificate, or equivalent, and for which the approval process of a change carried out by a Member State was not finalised at the time when the type-certificate had to be in accordance with this Regulation, the following shall apply:

(a) if an approval process is being carried out by several Member States, the most advanced project shall be used as the reference;
(b) point 21.A.93 of Annex I (Part 21) shall not apply;
(c) the applicable type-certification basis shall be that established by the JAA or, where applicable, the Member State at the date of application for the approval of change;
(d) compliance findings made under JAA or Member State procedures shall be deemed to have been made by the Agency for the purpose of complying with points 21.A.103(a)(2) and (b) of Annex I (Part 21).

4. With regard to products that had a national type-certificate, or equivalent, and for which the approval process of a major repair design carried out by a Member State was not finalised at the time when the type-certificate had to be determined in accordance with this Regulation, compliance findings made under JAA or Member State procedures shall be deemed to have been made by the Agency for the purpose of complying with point 21.A.433(a) of Annex I (Part 21).
5. A certificate of airworthiness issued by a Member State attesting conformity with a type-certificate determined in accordance with point 1 shall be deemed to comply with this Regulation.

Article 4

Continued validity of supplemental type-certificates

1. With regard to supplemental type-certificates issued by a Member State under JAA procedures or applicable national procedures and with regard to changes to products proposed by persons other than the type-certificate holder of the product, which were approved by a Member State under applicable national procedures, if the supplemental type-certificate, or change, was valid on 28 September 2003, the supplemental type-certificate, or change shall be deemed to have been issued under this Regulation.
2. With regard to supplemental type-certificates for which a certification process was being carried out by a Member State on 28 September 2003 under applicable JAA supplemental type-certificate procedures and with regard to major changes to products, proposed by persons other than the type-certificate holder of the product, for which a certification process was being carried out by a Member State on 28 September 2003 under applicable national procedures, the following shall apply:
(a) if a certification process was being carried out by several Member States, the most advanced project shall be used as the reference;
(b) point 21.A.113 (a) and (b) of Annex I (Part 21) shall not apply;
(c) the applicable certification basis shall be that established by the JAA or, where applicable, the Member State at the date of application for the supplemental type-certificate or the major change approval;
(d) the compliance findings made under JAA or Member State procedures shall be deemed to have been made by the Agency for the purpose of complying with point 21.A.115(a) of Annex I (Part 21).

Article 6

Continued validity of parts and appliances certificates

1. Approvals of parts and appliances issued by a Member State and valid on 28 September 2003 shall be deemed to have been issued in accordance with this Regulation.
2. With regard to parts and appliances for which an approval or authorisation process was being carried out by a Member State on 28 September 2003, the following shall apply:
(a) if an authorisation process was being carried out by several Member States, the most advanced project shall be used as the reference;
(b) point 21.A.603 of Annex I (Part 21) shall not apply;
(c) the applicable data requirements laid down in point 21.A.605 of Annex I (Part 21) shall be those established by the relevant Member State, at the date of application for the approval or authorisation;
(d) compliance findings made by the relevant Member State shall be deemed to have been made by the Agency for the purpose of complying with point 21.A.606(b) of Annex I (Part 21).

Article 7

Permit to fly

The conditions determined before 28 March 2007 by the Member States for permits to fly or other airworthiness certificate issued for aircraft which did not hold a certificate of airworthiness or restricted certificate of airworthiness issued under this Regulation, are deemed to have been determined in accordance with this Regulation, unless the

Agency has determined before 28 March 2008 that such conditions do not provide for a level of safety equivalent to that required by Regulation (EC) No 216/2008 or this Regulation.

Article 7a

Operational suitability data

1. The holder of an aircraft type-certificate issued before 17 February 2014 intending to deliver a new aircraft to an EU operator on or after 17 February 2014 shall obtain approval in accordance with point 21.A.21(e) of Annex I (Part 21) except for the minimum syllabus of maintenance certifying staff type rating training and except for aircraft validation source data to support the objective qualification of simulator(s). The approval shall be obtained not later than 18 December 2015 or before the aircraft is operated by an EU operator, whichever is the latest. The operational suitability data may be limited to the model which is delivered.
2. The applicant for an aircraft type-certificate for which the application was filed before 17 February 2014 and for which a type-certificate is not issued before 17 February 2014 shall obtain approval in accordance with point 21.A.21(e) of Annex I (Part 21) except for the minimum syllabus of maintenance certifying staff type rating training and for aircraft validation source data to support the objective qualification of simulator(s). The approval shall be obtained not later than 18 December 2015 or before the aircraft is operated by an EU operator, whichever is the latest. Compliance findings made by the authorities in Operational Evaluation Board processes conducted under the responsibility of the JAA or the Agency before the entry into force of this Regulation shall be accepted by the Agency without further verification.
3. Operational Evaluation Board reports and master minimum equipment lists issued in accordance with JAA procedures or by the Agency before the entry into force of this Regulation shall be deemed to constitute the operational suitability data approved in accordance with point 21.A.21(e) of Annex I (Part 21) and shall be included in the relevant type-certificate. Before 18 June 2014 the relevant type-certificate holders shall propose the Agency a division of the operational suitability data in mandatory data and non-mandatory data.
4. Holders of a type-certificate including operational suitability data shall be required to obtain approval of an extension of the scope of their design organisation approval or procedures alternative to design organisation approval, as applicable, to include operational suitability aspects before 18 December 2015.

Article 8

Design organisations

1. An organisation responsible for the design of products, parts and appliances or for changes or repairs thereto shall demonstrate its capability in accordance with Annex I (Part 21).
2. By way of derogation from point 1, an organisation whose principal place of business is in a non-member State may demonstrate its capability by holding a certificate issued by that State for the product, part and appliance for which it applies, provided:
   (a) that State is the State of design; and
   (b) the Agency has determined that the system of that State includes the same independent level of checking of compliance as provided by this Regulation, either through an equivalent system of approvals of organisations or through direct involvement of the competent authority of that State.
3. Design organisation approvals issued or recognised by a Member State in accordance with the JAA requirements and procedures and valid before 28 September 2003 shall be deemed to comply with this Regulation.

Article 9

Production organisations

1. An organisation responsible for the manufacture of products, parts and appliances shall demonstrate its capability in accordance with the provisions of Annex I (Part 21).
2. By way of derogation from point 1, a manufacturer whose principal place of business is in a non-member State may demonstrate its capability by holding a certificate issued by that State for the product, part and appliance for which it applies, provided:
   (a) that State is the State of manufacture; and
   (b) the Agency has determined that the system of that State includes the same independent level of checking of compliance as provided by this Regulation, either through an equivalent system of approvals of organisations or through direct involvement of the competent authority of that State.

3. Production organisation approvals issued or recognised by a Member State in accordance with the JAA requirements and procedures and valid before 28 September 2003 shall be deemed to comply with this Regulation.

Article 10

Agency measures

1. The Agency shall develop acceptable means of compliance (hereinafter called 'AMC') that competent authorities, organisations and personnel may use to demonstrate compliance with the provisions of the Annex I (Part 21) to this Regulation.
2. The AMC issued by the Agency shall neither introduce new requirements nor alleviate the requirements of the Annex I (Part 21) to this Regulation.
3. Without prejudice to Articles 54 and 55 of Regulation (EC) No 216/2008, when the acceptable means of compliance issued by the Agency are used, the related requirements of the Annex I (Part 21) to this Regulation shall be considered as met without further demonstration.

Article 11

Repeal

Regulation (EC) No 1702/2003 is repealed.

References to the repealed Regulation shall be construed as references to this Regulation and shall be read in accordance with the correlation table in Annex III.

Article 12

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

amendment (EU) 2019/897

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.
It shall apply from 23 March 2020, with the exception of Article 1(2) and point 11, points 13 to 14, points 23 to 26, point 28, point 30, point 21.B.85 in point 40 and point 43 of Annex which shall apply from 23 June 2019.’

PART 21

21.1 General

For the purpose of this Annex I (Part 21), 'competent authority' shall be:

(a) for organisations having their principal place of business in a Member State, the authority designated by that Member State; or the Agency if so requested by that Member State; or

(b) for organisations having their principal place of business in a non-member State, the Agency.

SECTION A TECHNICAL REQUIREMENTS

SUBPART A - GENERAL PROVISIONS

21.A.1 Scope

This Section establishes general provisions governing the rights and obligations of the applicant for, and holder of, any certificate issued or to be issued in accordance with this Section.

21.A.2 Undertaking by another person than the applicant for, or holder of, a certificate

The actions and obligations required to be undertaken by the holder of, or applicant for, a certificate for a product, part or appliance under this Section may be undertaken on its behalf by any other natural or legal person, provided the holder of, or applicant for, that certificate can show that it has made an agreement with the other person such as to ensure that the holder's obligations are and will be properly discharged.

21.A.3A Failures, malfunctions and defects

(a) System for Collection, Investigation and Analysis of Data

The holder of a type-certificate, restricted type-certificate, supplemental type-certificate, European Technical Standard Order (ETSO) authorisation, major repair design approval or any other relevant approval deemed to have been issued under this Regulation shall have a system for collecting, investigating and analysing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the continuing airworthiness of the product, part or appliance covered by the type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this Regulation. Information about this system shall be made available to all known operators of the product, part or appliance and, on request, to any person authorised under other associated implementing Regulations.

AMC No 1 to 21.A.3A(a) Collection, investigation and analysis of data related to Flammability Reduction Means (FRM) reliability

AMC No 2 to 21.A.3A(a) Collection, investigation and analysis of data related to ETOPS significant occurrences

GM 21.A.3A(a) The system for collection, investigation and analysis of data

(b) Reporting to the Agency

GM 21.A.3A(b) Occurrence reporting

1. The holder of a type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this Regulation shall report to the Agency any failure, malfunction, defect or other occurrence of which it is aware related to a product, part, or appliance covered by the type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this Regulation, and which has resulted in or may result in an unsafe condition.
2. These reports shall be made in a form and manner established by the Agency, as soon as practicable and in any case dispatched not later than 72 hours after the identification of the possible unsafe condition, unless exceptional circumstances prevent this.

AMC 21.A.3A(b)(2) Reporting to the Agency

(c) Investigation of Reported Occurrences

1. When an occurrence reported under point (b), or under points 21.A.129(f)(2) or 21.A.165(f)(2) results from a deficiency in the design, or a manufacturing deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorisation, or any other relevant approval deemed to have been issued under this Regulation, or the manufacturer as appropriate, shall investigate the reason for the deficiency and report to the Agency the results of its investigation and any action it is taking or proposes to take to correct that deficiency.
2. If the Agency finds that an action is required to correct the deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorisation, or any other relevant approval deemed to have been issued under this Regulation, or the manufacturer as appropriate, shall submit the relevant data to the Agency.

21.A.3B Airworthiness directives

(a) An airworthiness directive means a document issued or adopted by the Agency which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised.

(b) The Agency shall issue an airworthiness directive when:

AMC 21.A.3B(b) Unsafe condition

GM 21.A.3B(b) Determination of an unsafe condition

1. an unsafe condition has been determined by the Agency to exist in an aircraft, as a result of a deficiency in the aircraft, or an engine, propeller, part or appliance installed on this aircraft; and
2. that condition is likely to exist or develop in other aircraft.

(c) When an airworthiness directive has to be issued by the agency to correct the unsafe condition referred to in point (b), or to require the performance of an inspection, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorisation or any other relevant approval deemed to have been issued under this Regulation, shall:

1. propose the appropriate corrective action or required inspections, or both, and submit details of these proposals to the Agency for approval;
2. following the approval by the Agency of the proposals referred to under point (1), make available to all known operators or owners of the product, part or appliance and, on request, to any person required to comply with the airworthiness directive, appropriate descriptive data and accomplishment instructions.

(d) An airworthiness directive shall contain at least the following information:

1. an identification of the unsafe condition;
2. an identification of the affected aircraft;
3. the action(s) required;
4. the compliance time for the required action(s);

GM 21.A.3B(d)(4) Defect correction - Sufficiency of proposed corrective action

5. the date of entry into force.

21.A.4 Coordination between design and production

AMC 21.A.4 Transferring of information on eligibility and approval status from the design holder to production organisations

Each holder of a type-certificate, restricted type-certificate, supplemental type- certificate, ETSO authorisation, approval of a change to type-certificate or approval of a repair design, shall collaborate with the production organisation as necessary to ensure:

(a) the satisfactory coordination of design and production required by 21A.122, 21A.130(b)(3) and (4), 21A.133 and 21A.165(c)(2) and (3) as appropriate, and

(b) the proper support of the continued airworthiness of the product, part or appliance.

SUBPART B - TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

21.A.11 Scope

This Subpart establishes the procedure for issuing type-certificates for products and restricted type-certificates for aircraft, and establishes the rights and obligations of the applicants for, and holders of, those certificates.

21.A.13 Eligibility

Any natural or legal person that has demonstrated, or is in the process of demonstrating, its capability in accordance with point 21.A.14 shall be eligible as an applicant for a type-certificate or a restricted type-certificate under the conditions laid down in this Subpart.

21.A.14 Demonstration of capability

(a) Any organisation applying for a type-certificate or restricted type-certificate shall demonstrate its capability by holding a design organisation approval, issued by the Agency in accordance with Subpart J.

(b) By way of derogation from point (a), as an alternative procedure to demonstrate its capability, an applicant may seek the agreement of the Agency for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Annex I (Part 21), when the product is one of the following:

AMC 21.A.14(b) Alternative Procedures
GM 21.A.14(b) Eligibility for alternative procedures
AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b) Flight Test Operations Manual (FTOM)

1. an ELA2 aircraft;
2. an engine or propeller installed in ELA2 aircraft;
3. a piston engine;
4. a fixed or adjustable pitch propeller.

(c) By way of derogation from point (a), an applicant may choose for demonstration of capability by providing the Agency with the certification programme required by point 21.A.20(b) when the product is one of the following:

1. an ELA1 aircraft;
2. an engine or propeller installed in an ELA1 aircraft.

21.A.15 Application

(a) An application for a type-certificate or restricted type-certificate shall be made in a form and manner established by the Agency.

(b) An application for an aircraft type-certificate or restricted type-certificate shall be accompanied by a three-view drawing of that aircraft and preliminary basic data, including the proposed operating characteristics and limitations.

(c) An application for an engine or propeller type-certificate shall be accompanied by a general arrangement drawing, a description of the design features, the operating characteristics, and the proposed operating limitations, of the engine, or propeller.

(d) An application for a type-certificate or restricted type-certificate for an aircraft shall include, or be supplemented with, after the initial application, the application for approval of operational suitability data, consisting of, as applicable:

GM No 1 to 21.A.15(d) Clarification of the term 'as applicable'.
Appendix 1 to GM No 1 to 21.A.15(d)
GM No 2 to 21.A.15(d) Determination of type or variant
GM No 3 to 21.A.15(d) OSD content
GM No 4 to 21.A.15(d) Scope of operational suitability data.

1. the minimum syllabus of pilot type rating training, including determination of type rating;
2. the definition of scope of the aircraft validation source data to support the objective qualification of simulator(s) associated to the pilot type rating training, or provisional data to support their interim qualification;

3. the minimum syllabus of maintenance certifying staff type rating training, including determination of type rating;
4. determination of type or variant for cabin crew and type specific data for cabin crew;
5. the master minimum equipment list; and
6. other type-related operational suitability elements.

GM No 1 to 21.A.15(d)6 Other type-related operational suitability elements

21.A.16A Certification specifications

The Agency shall issue in accordance with Article 19 of Regulation (EC) No 216/2008 certification specifications, including certification specifications for operational suitability data, as standard means to demonstrate compliance of products, parts and appliances with the relevant essential requirements of Annex I, III and IV to Regulation (EC) No 216/2008. Such specifications shall be sufficiently detailed and specific to indicate to applicants the conditions under which certificates will be issued, amended or supplemented.

21.A.16B Special conditions

GM 21.A.16B Special Conditions

(a) The Agency shall prescribe special detailed technical specifications, named special conditions, for a product if the related certification specifications do not contain adequate or appropriate safety standards for the product, because:
   1. the product has novel or unusual design features relative to the design practices on which the applicable certification specifications are based; or
   2. the intended use of the product is unconventional; or
   3. experience from other similar products in service or products having similar design features, has shown that unsafe conditions may develop.

(b) The special conditions shall contain such safety standards as the Agency finds necessary to establish a level of safety equivalent to that established in the applicable certification specifications.

21.A.17A Type-certification basis

(a) The type-certification basis to be notified for the issuance of a type-certificate or a restricted type-certificate shall consist of:
   1. the applicable certification specifications established by the Agency that are effective on the date of application for that certificate unless:
      (i) otherwise specified by the Agency; or
      (ii) compliance with certification specifications of later effective amendments is chosen by the applicant or required under points (c) and (d);
   2. any special condition prescribed in accordance with point 21.A.16B(a).

(b) An application for type-certification of large aeroplanes and large rotorcraft shall be effective for five years and an application for any other type-certificate shall be effective for three years, unless an applicant shows at the time of application that its product requires a longer period of time for design, development, and testing, and the Agency approves a longer period.

(c) In the case where a type-certificate has not been issued, or it is clear that a type-certificate will not be issued, within the time limit established under point (b), the applicant may:
   1. file a new application for a type-certificate and comply with all the provisions of point (a) applicable to an original application; or
   2. file for an extension of the original application and comply with the applicable certification specifications that were effective on a date, to be selected by the applicant, not earlier than the date which precedes the date of issue of the type-certificate by the time limit established under point (b) for the original application.

(d) If an applicant chooses to comply with a certification specification of an amendment to the airworthiness codes that is effective after the filing of the application for a type-certificate, the applicant shall also comply with any other certification specification that the Agency finds is directly related.

21.A.17B Operational suitability data certification basis

(a) The Agency shall notify to the applicant the operational suitability data certification basis. It shall consist of:
1. the applicable certification specifications for operational suitability data issued in accordance with point 21.A.16A that are effective on the date of application or application supplement, unless:

GM 21.A.17B (a)(1) Reference date for operational suitability certification basis

(i) the Agency accepts other means to demonstrate compliance with the relevant essential requirements of Annexes I, III and IV to Regulation (EC) No 216/2008; or
(ii) compliance with certification specifications of later effective amendments is chosen by the applicant;
2. any special condition prescribed in accordance with point 21.A.16B(a).

(b) If an applicant chooses to comply with an amendment to the certification specifications that is effective after the filing of the application for a type-certificate, the applicant shall also comply with any other certification specification that the Agency finds is directly related.

21.A.18 Designation of applicable environmental protection requirements and certification specifications

(a) The applicable noise requirements for the issue of a type certificate for an aircraft are prescribed according to the provisions of Chapter 1 of Annex 16, Volume I, Part II to the Chicago Convention and:
1. for subsonic jet aeroplanes, in Volume I, Part II, Chapters 2, 3, 4 and 14, as applicable;
2. for propeller-driven aeroplanes, in Volume I, Part II, Chapters 3, 4, 5, 6, 10 and 14, as applicable;
3. for helicopters, in Volume I, Part II, Chapters 8 and 11, as applicable;
4. for supersonic aeroplanes, in Volume I, Part II, Chapter 12, as applicable; and
5. for tilt-rotors, in Volume I, Part II, Chapter 13, as applicable.

(b) The applicable emission requirements for the issue of a type-certificate for an aircraft and engine are prescribed in Annex 16 to the Chicago Convention:
1. for prevention of intentional fuel venting, in Volume II, Part II, Chapter 2;
2. for emissions of turbo-jet and turbofan engines intended for propulsion only at subsonic speeds, in Volume II, Part III, Chapter 2; and
3. for emissions of turbo-jet and turbofan engines intended for propulsion only at supersonic speeds, in Volume II, Part III, Chapter 3.

(c) The Agency shall issue, in accordance with Article 19 of Regulation (EC) No 216/2008, certification specifications providing for acceptable means to demonstrate compliance with the noise and the emission requirements laid down in points (a) and (b) respectively.

<EU 2016/5, (a) changed>

21.A.19 Changes requiring a new type-certificate

Any natural or legal person proposing to change a product shall apply for a new type-certificate if the Agency finds that the change in design, power, thrust, or mass is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

21.A.20 Compliance with the type-certification basis, operational suitability data certification basis and environmental protection requirements

(a) The applicant for a type-certificate or a restricted type-certificate shall demonstrate compliance with the applicable type-certification basis, the applicable operational suitability data certification basis and environmental protection requirements and shall provide the Agency with the means by which such compliance has been demonstrated.

(b) The applicant shall provide the Agency with a certification programme detailing the means for compliance demonstration. This document shall be updated as necessary during the certification process.

AMC 21.A.20(b) Certification programme

Appendix to AMC 21.A.20(b) - Means of compliance codes

GM 21.A.20(b) Update to the Certification Programme

(c) The applicant shall record justification of compliance within compliance documents according to the certification programme established under point (b).

AMC 21.A.20(c) Compliance documentation

(d) The applicant shall declare that it has demonstrated compliance with the applicable type-certification basis and environmental protection requirements, according to the certification programme established under point (b).

GM 21.A.20(d) Final statement

(e) Where the applicant holds an appropriate design organisation approval, the declaration of point (d) shall be me according to the provisions of Subpart J.

21.A.21 Issue of a type-certificate

The applicant shall be entitled to have a product type-certificate issued by the Agency after:

(a) demonstrating its capability in accordance with point 21.A.14;

(b) submitting the declaration referred to in point 21.A.20(d); and

(c) it is shown that:

1. the product to be certificated meets the applicable type-certification basis and environmental protection requirements designated in accordance with point 21.A.17A and 21.A.18;
2. any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety;
3. no feature or characteristic makes it unsafe for the uses for which certification is requested; and
4. the type-certificate applicant has expressly stated that it is prepared to comply with point 21.A.44.

(d) In the case of an aircraft type-certificate, the engine or propeller, or both, if installed in the aircraft, have a type-certificate issued or determined in accordance with this Regulation;

(e) In the case of an aircraft type-certificate, it is demonstrated that the operational suitability data meets the applicable operational suitability data certification basis designated in accordance with 21.A.17B;

(f) By derogation from point (e), and at the request of the applicant included in the declaration referred to in point 21.A.20(d), an aircraft type-certificate may be issued before compliance with the applicable operational suitability data certification basis has been demonstrated, subject to the applicant demonstrating compliance with the operational suitability data certification basis before the operational suitability data must actually be used.

GM No 1 to 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 Approval of OSD

21.A.23 Issue of a restricted type-certificate

(a) For an aircraft that does not meet the provisions of point 21.A.21(c), the applicant shall be entitled to have a restricted type-certificate issued by the Agency after:

1. complying with the appropriate type-certification basis established by the Agency ensuring adequate safety with regard to the intended use of the aircraft, and with the applicable environmental protection requirements;
2. expressly stating that it is prepared to comply with point 21.A.44;
3. in the case of an aircraft restricted type-certificate, it is demonstrated that the operational suitability data meets the applicable operational suitability data certification basis designated in accordance with point 21.A.17B.

(b) By derogation from point 3 of point (a), and at the request of the applicant included in the declaration referred to in point 21.A.20(d), a restricted type-certificate may be issued before compliance with the applicable operational suitability data certification basis has been demonstrated, subject to the applicant demonstrating compliance with the operational suitability data certification basis before the operational suitability data must actually be used.

GM No 1 to 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 Approval of OSD

(c) The engine or propeller installed in the aircraft, or both, shall:

1. have a type-certificate issued or determined in accordance with this Regulation; or
2. have been shown to be in compliance with the certification specifications necessary to ensure safe flight of the aircraft.

21.A.31 Type design

(a) The type design shall consist of:

1. the drawings and specifications, and a listing of those drawings and specifications, necessary to define the configuration and the design features of the product shown to comply with the applicable type-certification basis and environmental protection requirements;
2. information on materials and processes and on methods of manufacture and assembly of the product necessary to ensure the conformity of the product;
3. an approved airworthiness limitations section of the instructions for continued airworthiness as defined by the applicable certification specifications; and
4. any other data allowing by comparison the determination of the airworthiness and, if relevant, the environmental characteristics of later products of the same type.

(b) Each type design shall be adequately identified.

<(EU) 2019/897, applies from 23.6.2019; (a)(4) changed>

21.A.33 Inspection and tests

GM 21.A.33 Inspection and Tests

(a) The applicant shall perform all inspections and tests necessary to demonstrate compliance with the applicable type-certification basis and environmental protection requirements.

(b) Before each test required by point (a) is undertaken, the applicant shall have determined:

1. for the test specimen:
   (i) that materials and processes adequately conform to the specifications for the proposed type design;
   (ii) that parts of the products adequately conform to the drawings in the proposed type design;
   (iii) that the manufacturing processes, construction and assembly adequately conform to those specified in the proposed type design; and
2. that the test equipment and all measuring equipment used for tests are adequate for the test and are appropriately calibrated.

(c) The applicant shall allow the Agency to make any inspection necessary to check compliance with point (b).

(d) The applicant shall allow the Agency to review any report and make any inspection and to perform or witness any flight and ground test necessary to check the validity of the declaration of compliance submitted by the applicant under point 21.A.20(d) and to determine that no feature or characteristic makes the product unsafe for the uses for which certification is requested.

(e) For tests performed or witnessed by the Agency under point (d):

1. the applicant shall submit to the Agency a statement of compliance with point (b); and
2. no change relating to the test that would affect the statement of compliance may be made to a product, part or appliance between the time compliance with point (b) is shown and the time it is presented to the Agency for test.

21.A.35 Flight Tests

GM 21.A.35 Flight Tests

(a) Flight testing for the purpose of obtaining a type-certificate shall be conducted in accordance with conditions for such flight testing specified by the Agency.

(b) The applicant shall make all flight tests that the Agency finds necessary:

1. to determine compliance with the applicable type-certification basis and environmental protection requirements; and
2. to determine whether there is reasonable assurance that the aircraft, its parts and appliances are reliable and function properly for aircraft to be certificated under this Annex I (Part 21), except for,

GM 21.A.35(b)(2) Objective and Content of Function and Reliability Testing

   (i) sailplanes and powered sailplanes;
   (ii) balloons and airships defined in ELA1 or ELA2;
   (iii) aeroplanes of 2 722 kg or less maximum take-off mass (MTOM).

(c) (Reserved)

(d) (Reserved)

(e) (Reserved)

(f) The flight tests prescribed in point (b)(2) shall include:

1. for aircraft incorporating turbine engines of a type not previously used in a type-certificated aircraft, at least 300 hours of operation with a full complement of engines that conform to a type-certificate; and

GM 21.A.35(f)(1) Flying Time for Function and Reliability Testing

2. for all other aircraft, at least 150 hours of operation.

GM 21.A.35(f)(2) Flying Time for Function and Reliability Testing

21.A.41 Type-certificate

The type-certificate and restricted type-certificate shall include the type design, the operating limitations, the type-certificate data sheet for airworthiness and emissions, the applicable type-certification basis and environmental protection requirements with which the Agency records compliance, and any other conditions or limitations prescribed for the product in the applicable certification specifications and environmental protection requirements. The aircraft type-certificate and restricted type-certificate shall include in addition the applicable operational suitability data certification basis, the operational suitability data and the type-certificate data sheet for noise. The aircraft type-certificate and restricted type-certificate data sheet shall include the record of CO2 emissions compliance and the engine type-certificate data sheet shall include the record of exhaust emissions compliance.

<(EU) 2019/897, applies from 23.6.2019; rewrite>

21.A.44 Obligations of the holder

Each holder of a type-certificate or restricted type-certificate shall:

(a) undertake the obligations laid down in points 21.A.3A, 21.A.3B, 21.A.4, 21.A.55, 21.A.57, 21.A.61 and 21.A.62; and, for this purpose, shall continue to meet the qualification requirements for eligibility under point 21.A.14; and

(b) specify the marking in accordance with Subpart Q.

21.A.47 Transferability

Transfer of a type-certificate or restricted type-certificate may only be made to a natural or legal person that is able to undertake the obligations under point 21.A.44, and, for this purpose, has demonstrated its ability to qualify under the criteria of point 21.A.14.

21.A.51 Duration and continued validity

(a) A type-certificate and restricted type-certificate shall be issued for an unlimited duration. They shall remain valid subject to:
   1. the holder remaining in compliance with this Annex 1 (Part 21); and
   2. the certificate not being surrendered or revoked under the applicable administrative procedures established by the Agency.

(b) Upon surrender or revocation, the type-certificate and restricted type-certificate shall be returned to the Agency.

21.A.55 Record-keeping

All relevant design information, drawings and test reports, including inspection records for the product tested, shall be held by the type-certificate or restricted type-certificate holder at the disposal of the Agency and shall be retained in order to provide the information necessary to ensure the continued airworthiness, continued validity of the operational suitability data and compliance with applicable environmental protection requirements of the product.

21.A.57 Manuals

The holder of a type-certificate or restricted type-certificate shall produce, maintain and update master copies of all manuals required by the applicable type-certification basis, the applicable operational suitability data certification basis and environmental protection requirements for the product, and provide copies, on request, to the Agency.

21.A.61 Instructions for continued airworthiness

(a) The holder of the type-certificate or restricted type-certificate shall furnish at least one set of complete instructions for continued airworthiness, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable type-certification basis, to each known owner of one or more aircraft, engine or propeller upon its delivery or upon issue of the first certificate of airworthiness for the affected aircraft, whichever occurs later and thereafter make those instructions available on request to any other person required to comply with any of the terms of those instructions. The availability of some manual or portion of the instructions for continued airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight-hours/ cycles.

(b) In addition, changes to the instructions for continued airworthiness shall be made available to all known operators of the product and shall be made available on request to any person required to comply with any of those instructions. A programme showing how changes to the instructions for continued airworthiness are distributed shall be submitted to the Agency.

21.A.62 Availability of operational suitability data

GM to 21.A.62, 21.A108 and 21.A.120B Availability of Operational

The holder of the type-certificate or restricted type-certificate shall make available:

(a) at least one set of complete operational suitability data prepared in accordance with the applicable operational suitability certification basis, to all known EU operators of the aircraft, before the operational suitability data must be used by a training organisation or an EU operator; and

(b) any change to the operational suitability data to all known EU operators of the aircraft; and

(c) on request, the relevant data referred to in points (a) and (b) above, to:

1. the competent authority responsible for verifying conformity with one or more elements of this set of operational suitability data; and
2. any person required to comply with one or more elements of this set of operational suitability data.

(SUBPART C - NOT APPLICABLE)

SUBPART D - CHANGES TO TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

21.A.90A Scope

GM to 21.A.90A Scope

This Subpart establishes the procedure for the approval of changes to type-certificates, and establishes the rights and obligations of the applicants for, and holders of, those approvals. This Subpart also defines standard changes that are not subject to an approval process under this Subpart. In this Subpart, references to type-certificates include type-certificate and restricted type-certificate.

21.A.90B Standard changes

GM 21.A.90B Standard changes — Certification Specifications

(a) Standard changes are changes to a type-certificate:
1. in relation to:
   (i) aeroplanes of 5 700 kg Maximum Take-Off Mass (MTOM) or less;
   (ii) rotorcraft of 3 175 kg MTOM or less;
   (iii) sailplanes, powered sailplanes, balloons and airships, as defined in ELA1 or ELA2,
2. that follow design data included in certification specifications issued by the Agency, containing acceptable methods, techniques and practices for carrying out and identifying standard changes, including the associated instructions for continuing airworthiness; and
3. that are not in conflict with TC holders data.

(b) Points 21.A.91 to 21.A.109 are not applicable to standard changes.

21.A.91 Classification of changes to a type-certificate

GM 21.A.91

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

Changes to a type-certificate are classified as minor and major. A 'minor change' is one that has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emission, operational suitability data or other characteristics affecting the airworthiness of the product. Without prejudice to point 21.A.19, all other changes are 'major changes' under this Subpart. Major and minor changes shall be approved in accordance with points 21.A.95 or 21.A.97, as appropriate, and shall be adequately identified.

<(EU) 2019/897, applies from 23.6.2019; rewrite>

21.A.92 Eligibility

(a) Only the type-certificate holder may apply for approval of a major change to a type-certificate under this Subpart; all other applicants for a major change to a type-certificate shall apply under Subpart E.

(b) Any natural or legal person may apply for approval of a minor change to a type-certificate under this Subpart.

21.A.93 Application

An application for approval of a change to a type-certificate shall be made in a form and manner established by the Agency and shall include:

(a) A description of the change identifying:
1. all parts of the type design and the approved manuals affected by the change; and
2. the certification specifications and environmental protection requirements with which the change has been designed to comply in accordance with point 21.A.101.

(b) Identification of any re-investigations necessary to show compliance of the changed product with the applicable certification specifications and environmental protection requirements.

GM 21.A.93(b) Major Changes: Application

(c) When the change affects the operational suitability data, the application shall include, or be supplemented after the initial application to include the necessary changes to the operational suitability data.

GM No 1 to 21.A.93(c) Interaction of changes to the type design and changes to operational suitability data (OSD)

GM No 2 to 21.A.93(c) Interaction of changes to the type design and changes to MMEL

21.A.95 Minor changes

Minor changes to a type-certificate shall be classified and approved either:

(a) by the Agency; or

(b) by an appropriately approved design organisation under a procedure agreed with the Agency.

21.A.97 Major changes

AMC 21.A.97 Compliance demonstration process for major changes

(a) An applicant for approval of a major change shall:

1. submit to the Agency substantiating data together with any necessary descriptive data for inclusion in the type design;
2. demonstrate that the changed product complies with applicable certification specifications and environmental protection requirements, as specified in point 21.A.101;
3. comply with points 21.A.20(b), (c) and (d); and
4. where the applicant holds an appropriate design organisation approval, make the declaration referred to in point 21.A.20(d) according to the provisions of Subpart J;
5. comply with point 21.A.33 and, where applicable, point 21.A.35.

(b) Approval of a major change in a type-certificate is limited to that or those specific configuration(s) in the type-certificate upon which the change is made.

21.A.101 Designation of applicable certification specifications and environmental protection requirements

GM 21.A.101 Establishment of the type-certification basis of changed aeronautical products
Appendix A. to GM 21.A.101 Classification of Changes
Appendix B to GM 21.A.101 Procedure for evaluating impracticality of applying latest certification specifications to a changed product
Appendix C to GM 21.A.101 The use of service experience in the certification process
Appendix D to GM 21.A.101 Tables and figures to assist CPR understanding
Appendix E to GM 21.A.101 Related Part 21 Requirements

(a) An applicant for a change to a type-certificate shall demonstrate that the changed product complies with the certification specifications that are applicable to the changed product and that are in effect at the date of the application for the change, unless compliance with certification specifications of later effective amendments is chosen by the applicant or required under points (e) and (f), and with the applicable environmental protection requirements laid down in point 21.A.18.

(b) By derogation from point (a), an applicant may show that the changed product complies with an earlier amendment of the certification specifications referred to in point (a), and of any other certification specification the Agency finds is directly related. However, the earlier amended certification specifications shall not precede the corresponding certification specifications incorporated by reference in the type-certificate. The applicant may show compliance with an earlier amendment of the certification specifications for any of the following:

1. A change that the Agency finds not to be significant. In determining whether a specific change is significant, the Agency considers the change in context with all previous relevant design changes and all related revisions to the applicable certification specifications incorporated in the type-certificate for the product. Changes that meet one of the following criteria are automatically considered significant:
   (i) the general configuration or the principles of construction are not retained;
   (ii) the assumptions used for certification of the product to be changed do not remain valid.
2. Each area, system, part or appliance that the Agency finds is not affected by the change.
3. Each area, system, part or appliance that is affected by the change, for which the Agency finds that compliance with the certification specifications referred to in point (a) would not contribute materially to the level of safety of the changed product or would be impractical.

(c) An applicant for a change to an aircraft (other than a rotorcraft) of 2 722 kg (6 000 lbs) or less maximum weight or to a non-turbine rotorcraft of 1 361 kg (3 000 lbs) or less maximum weight may show that the changed product complies with the type-certification basis incorporated by reference in the type-certificate.

However, if the Agency finds that the change is significant in an area, the Agency may designate compliance with an amendment to the type-certification basis incorporated by reference in the type-certificate in effect at the date of the application and any certification specification that the Agency finds is directly related, unless the Agency also finds that compliance with that amendment or certification specification would not contribute materially to the level of safety of the changed product or would be impractical.

(d) If the Agency finds that the certification specifications in effect at the date of the application for the change do not provide adequate standards with respect to the proposed change, the applicant shall also comply with any special conditions, and amendments to those special conditions, prescribed under the provisions of point 21.A.16B, to provide a level of safety equivalent to that established in the certification specifications in effect at the date of the application for the change.

(e) An application for a change to a type-certificate for large aeroplanes and large rotorcraft is effective for five years, and an application for a change to any other type-certificate is effective for three years. In a case where the change has not been approved, or it is clear that it will not be approved under the time limit established under this point, the applicant may:

1. file a new application for a change to the type-certificate and comply with all the provisions of point (a) applicable to an original application for a change; or
2. file for an extension of the original application and comply with the provisions of point (a) for an effective date of application, to be selected by the applicant, not earlier than the date which precedes the date of approval of the change by the time period established under this point for the original application for the change.

(f) If an applicant chooses to comply with a certification specification of an amendment to the certification specifications that is effective after the filing of the application for a change to a type, the applicant shall also comply with any other certification specification that the Agency finds is directly related.

(g) When the application for a change to a type-certificate for an aircraft includes, or is supplemented after the initial application to include changes to the operational suitability data, the operational suitability data certification basis shall be designated in accordance with points (a), (b), (c), (d) and (f) above.

GM No 1 to 21.A.101(g) Establishment of the operational suitability data (OSD) certification basis of changed type certificates (TCs)

21.A.103 Issue of approval

GM No 1 to 21.A.103, 21.A.115 and 21.B.70 Approval of changes to type certificates (TCs)

(a) The applicant shall be entitled to have a major change to a type-certificate approved by the Agency after:

1. submitting the declaration referred to in point 21.A.20(d); and
2. it is demonstrated that:
   (i) the changed product meets the applicable certification specifications and environmental protection requirements, as specified in point 21.A.101;
   (ii) any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety; and
   (iii) no feature or characteristic makes the product unsafe for the uses for which certification is requested.
3. in the case of a change affecting the operational suitability data, it is demonstrated that the necessary changes to the operational suitability data meet the applicable operational suitability data certification basis designated in accordance with point 21.A.101(g);
4. by derogation from point 3, and at the request of the applicant included in the declaration referred to in point 21.A.20(d), a major change to an aircraft type-certificate may be approved before compliance with the applicable operational suitability data certification basis has been demonstrated, subject to the applicant demonstrating compliance with the operational suitability data certification basis before the operational suitability data must actually be used.

GM No 1 to 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 Approval of OSD

(b) A minor change to a type-certificate shall only be approved in accordance with point 21.A.95 if it is shown that the changed product meets the applicable certification specifications, as specified in point 21.A.101.

21.A.105 Record-keeping

For each change, all relevant design information, drawings and test reports, including inspection records for the changed product tested, shall be held by the applicant at the disposal of the Agency and shall be retained in order to provide the information necessary to ensure the continued airworthiness, continued validity of the operational suitability data and compliance with applicable environmental protection requirements of the changed product.

21.A.107 Instructions for continued airworthiness

(a) The holder of a minor change approval to a type-certificate shall furnish at least one set of the associated variations, if any, to the instructions for continued airworthiness of the product on which the minor change is to be installed, prepared in accordance with the applicable type-certification basis, to each known owner of one or more aircraft, engine, or propeller incorporating the minor change, upon its delivery, or upon issuance of the first certificate of airworthiness for the affected aircraft, whichever occurs later, and thereafter make those variations in instructions available, on request, to any other person required to comply with any of the terms of those instructions.

(b) In addition, changes to those variations of the instructions for continued airworthiness shall be made available to all known operators of a product incorporating the minor change and shall be made available, on request, to any person required to comply with any of those instructions.

21.A.108 Availability of operational suitability data

GM to 21.A.62, 21.A108 and 21.A.120B Availability of Operational

In the case of a change affecting the operational suitability data, the holder of the minor change approval shall make available:

(a) at least one set of changes to the operational suitability data prepared in accordance with the applicable operational suitability certification basis, to all known EU operators of the changed aircraft, before the operational suitability data must be used by a training organisation or an EU operator; and

(b) any further change to the affected operational suitability data, to all known EU operators of the changed aircraft; and

(c) on request, the relevant parts of the changes in points (a) and (b) above, to:

1. the competent authority responsible for verifying conformity with one or more elements of the affected operational suitability data; and
2. any person required to comply with one or more elements of this set of operational suitability data.

21.A.109 Obligations and EPA marking

The holder of a minor change approval to a type-certificate shall:

(a) undertake the obligations laid down in points 21.A.4, 21.A.105, 21.A.107 and 21.A.108; and

(b) specify the marking, including EPA (European Part Approval) letters, in accordance with point 21.A.804(a).

SUBPART E - SUPPLEMENTAL TYPE-CERTIFICATES

21.A.111 Scope

This Subpart establishes the procedure for the approval of major changes to the type-certificate under supplemental type-certificate procedures, and establishes the rights and obligations of the applicants for, and holders of, those certificates.

21.A.112A Eligibility

Any natural or legal person ('organisation') that has demonstrated, or is in the process of demonstrating, its capability under point 21.A.112B shall be eligible as an applicant for a supplemental type-certificate under the conditions laid down in this Subpart.

21.A.112B Demonstration of capability

GM No1 21.A.112B Demonstration of capability for supplemental type-certificate (STC) cases

(a) Any organisation applying for a supplemental type-certificate shall demonstrate its capability by holding a design organisation approval, issued by the Agency in accordance with Subpart J.

(b) By way of derogation from point (a), as an alternative procedure to demonstrate its capability, an applicant may seek Agency agreement for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Subpart.

AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b)
Flight Test Operations Manual (FTOM)

(c) By way of derogation from points (a) and (b), an applicant may choose for demonstration of capability through Agency approval of a certification programme detailing the means for compliance demonstration for an STC on an aircraft, engine and propeller defined in point 21.A.14(c).

21.A.113 Application for a supplemental type-certificate

(a) An application for a supplemental type-certificate shall be made in a form and manner established by the Agency.

(b) An application for a supplemental type-certificate shall include the descriptions, identification, and changes to the operational suitability data required by point 21.A.93. In addition, such an application shall include a justification that the information on which those elements are based is adequate either from the applicant's own resources, or through an arrangement with the type-certificate holder.

21.A.114 Showing of compliance

AMC 21.A.114 Compliance demonstration process for Supplemental Type-Certificate

Any applicant for a supplemental type-certificate shall comply with point 21.A.97.

21.A.115 Issue of a supplemental type-certificate

GM No 1 to 21.A.103, 21.A.115 and 21.B.70 Approval of changes to type certificates (TCs)

The applicant shall be entitled to have a supplemental type-certificate issued by the Agency after:

(a) submitting the declaration referred to in point 21.A.20(d); and

(b) it is demonstrated that:

1. the changed product meets the applicable certification specifications and environmental protection requirements, as specified in point 21.A.101;
2. any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety; and
3. no feature or characteristic makes the product unsafe for the uses for which certification is requested.

(c) demonstrating its capability in accordance with point 21.A.112B;

(d) where, under point 21.A.113(b), the applicant has entered into an arrangement with the type-certificate holder,

1. the type-certificate holder has advised that it has no technical objection to the information submitted under point 21.A.93; and

2. the type-certificate holder has agreed to collaborate with the supplemental type-certificate holder to ensure discharge of all obligations for continued airworthiness of the changed product through compliance with points 21.A.44 and 21.A.118A.

21.A.116 Transferability

A supplemental type-certificate shall only be transferred to a natural or legal person that is able to undertake the obligations of point 21.A.118A and for this purpose has demonstrated its ability to qualify under the criteria of point 21.A.112B except for ELA1 aircraft for which the natural or legal person has sought the Agency agreement for the use of procedures setting out its activities to undertake these obligations.

21.A.117 Changes to that part of a product covered by a supplemental type-certificate

(a) Minor changes to that part of a product covered by a supplemental type-certificate shall be classified and approved in accordance with Subpart D.

(b) Each major change to that part of a product covered by a supplemental type-certificate shall be approved as a separate supplemental type-certificate in accordance with this Subpart.

(c) By way of derogation from point (b), a major change to that part of a product covered by a supplemental type-certificate submitted by the supplemental type-certificate holder itself may be approved as a change to the existing supplemental type-certificate.

21.A.118A Obligations and EPA marking

Each holder of a supplemental type-certificate shall:

(a) undertake the obligations:
1. laid down in points 21.A.3A, 21.A.3B, 21.A.4, 21.A.105, 21.A.119, 21.A.120A and 21.A.120B;
2. implicit in the collaboration with the type-certificate holder under point 21.A.115(d)(2);

and for this purpose continue to meet the criteria of point 21.A.112B;

(b) specify the marking, including EPA letters, in accordance with point 21.A.804(a).

21.A.118B Duration and continued validity

(a) A supplemental type-certificate shall be issued for an unlimited duration. It shall remain valid subject to:
1. the holder remaining in compliance with this Annex I (Part 21); and
2. the certificate not being surrendered or revoked under the applicable administrative procedures established by the Agency.

(b) Upon surrender or revocation, the supplemental type-certificate shall be returned to the Agency.

21.A.119 Manuals

The holder of a supplemental type-certificate shall produce, maintain, and update master copies of variations in the manuals required by the applicable type-certification basis, the applicable operational suitability data certification basis and environmental protection requirements for the product, necessary to cover the changes introduced under the supplemental type-certificate, and furnish copies of those manuals to the Agency on request.

21.A.120A Instructions for continued airworthiness

(a) The holder of the supplemental type-certificate for an aircraft, engine, or propeller, shall furnish at least one set of the associated variations to the instructions for continued airworthiness, prepared in accordance with the applicable type-certification basis, to each known owner of one or more aircraft, engine, or propeller incorporating the features of the supplemental type-certificate, upon its delivery, or upon issuance of the first certificate of airworthiness for the affected aircraft, whichever occurs later, and thereafter make those variations in instructions available, on request, to any other person required to comply with any of the terms of those instructions. Availability of some manual or portion of the variations to the instructions for continued airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight-hours/cycles.

(b) In addition, changes to those variations of the instructions for continued airworthiness shall be made available to all known operators of a product incorporating the supplemental type-certificate and shall be made available, on request, to any person required to comply with any of those instructions. A programme showing how changes to the variations to the instructions for continued airworthiness are distributed shall be submitted to the Agency.

21.A.120B Availability of operational suitability data

GM to 21.A.62, 21.A108 and 21.A.120B Availability of Operational

In the case of a change affecting the operational suitability data, the holder of the supplemental type-certificate shall make available:

(a) at least one set of changes to the operational suitability data prepared in accordance with the applicable operational suitability certification basis, to all known EU operators of the changed aircraft, before the operational suitability data must be used by a training organisation or an EU operator; and

(b) any further change to the affected operational suitability data, to all known EU operators of the changed aircraft; and

(c) on request, the relevant parts of the changes in points (a) and (b) above, to:

1. the competent authority responsible for verifying conformity with one or more elements of the affected operational suitability data; and
2. any person required to comply with one or more elements of this set of operational suitability data.

SUBPART F - PRODUCTION WITHOUT PRODUCTION ORGANISATION APPROVAL

21.A.121 Scope

GM No. 1 to 21.A.121 Applicability - Individual product, part or appliance

GM No. 2 to 21.A.121 Applicability - Applicable design data

(a) This Subpart establishes the procedure for demonstrating the conformity with the applicable design data of a product, part and appliance that is intended to be manufactured without a production organisation approval under Subpart G.

(b) This Subpart establishes the rules governing the obligations of the manufacturer of a product, part, or appliance being manufactured under this Subpart.

21.A.122 Eligibility

AMC No. 1 to 21.A.122 Eligibility - Link between design and production

AMC No. 2 to 21.A.122 Eligibility - Link between design and production

Any natural or legal person may apply to show conformity of individual products, parts or appliances under this Subpart, if:

(a) it holds or has applied for an approval covering the design of that product, part or appliance; or

(b) it has ensured satisfactory coordination between production and design, through an appropriate arrangement with the applicant for, or holder of, an approval of such a design.

21.A.124 Application

(a) Each application for an agreement to the showing of conformity of individual products, parts and appliances under this Subpart shall be made in a form and manner established by the competent authority.

GM 21.A.124(a) Application - Application form

(b) Such application shall contain:

1. evidence which demonstrates, where applicable, that:
   (i) the issuance of a production organisation approval under Subpart G would be inappropriate; or

   GM 21.A.124(b)(1)(i) Applicability - Inappropriate approval under Subpart G

   (ii) the certification or approval of a product, part or appliance under this Subpart is needed pending the issuance of a production organisation approval under Subpart G;

   GM 21.A.124(b)(1)(ii) Certification or approval needed in advance of the issue of a POA
2. an outline of the information required in point 21.A.125A(b).

GM 21.A.124(b)(2) Application - Minimum information to include with the application

21.A.125A Issue of a letter of agreement

GM No. 1 to 21.A.125A Letter of agreement - Meaning of individual

The applicant shall be entitled to have a letter of agreement issued by the competent authority agreeing to the showing of conformity of individual products, parts and appliances under this Subpart, after:

(a) having established a production inspection system that ensures that each product, part or appliance conforms to the applicable design data and is in condition for safe operation;

(b) having provided a manual that contains:

GM No. 1 to 21.A.125A(b) Letter of agreement - Contents of the Manual

GM No. 2 to 21.A.125A(b) Letter of agreement - Production Inspection System: Functional Tests

1. a description of the production inspection system required under point (a);
2. a description of the means for making the determination of the production inspection system;
3. a description of the tests required in points 21.A.127 and 21.A.128, and the names of persons authorised for the purpose of point 21.A.130(a);

(c) demonstrating that it is able to provide assistance in accordance with points 21.A.3A and 21.A.129(d).

GM 21.A.125A(c) Letter of agreement - Assistance

21.A.125B Findings

GM No. 1 to 21.A.125A(b) Letter of agreement - Contents of the Manual

(a) When objective evidence is found showing non-compliance of the holder of a letter of agreement with the applicable requirements of this Annex I (Part 21), the finding shall be classified as follows:

GM No. 1 to 21.A.125B(a) Uncontrolled non-compliance with applicable design data

GM No. 2 to 21.A.125B(a) Examples for level one findings

1. a level one finding is any non-compliance with this Annex I (Part 21) which could lead to uncontrolled non-compliances with applicable design data and which could affect the safety of the aircraft;
2. a level two finding is any non-compliance with this Annex I (Part 21) which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under point (a).

(c) After receipt of notification of findings according to point 21.B.125:

1. in case of a level one finding, the holder of the letter of agreement shall demonstrate corrective action to the satisfaction of the competent authority within a period of no more than 21 working days after written confirmation of the finding;
2. in case of level two findings, the corrective action period granted by the competent authority shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and subject to the nature of the finding, the competent authority may extend the three months period subject to the provision of a satisfactory corrective action plan agreed by the competent authority;
3. a level three finding shall not require immediate action by the holder of the letter of agreement.

(d) In case of level one or level two findings, the letter of agreement may be subject to a partial or full limitation, suspension and revocation under point 21.B.145. The holder of the letter of agreement shall provide confirmation of receipt of the notice of limitation, suspension or revocation of the letter of agreement in a timely manner.

21.A.125C Duration and continued validity

(a) The letter of agreement shall be issued for a limited duration not exceeding one year. It shall remain valid unless:

1. the holder of the letter of agreement fails to demonstrate compliance with the applicable requirements of this Subpart; or
2. there is evidence that the manufacturer cannot maintain satisfactory control of the manufacture of products, parts, or appliances under the agreement; or
3. the manufacturer no longer meets the requirements of point 21.A.122; or
4. the letter of agreement has been surrendered, revoked under point 21.B.145, or has expired.

(b) Upon surrender, revocation or expiry, the letter of agreement shall be returned to the competent authority.

21.A.126 Production inspection system

GM 21.A.126 Production Inspection System

(a) The production inspection system required under point 21.A.125A(a) shall provide a means for determining that:

1. incoming materials, and bought or subcontracted parts, used in the finished product are as specified in the applicable design data;

GM 21.A.126(a)(1) Production Inspection System - Conformity of supplied parts, appliances and material

2. incoming materials, and bought or subcontracted parts, are properly identified;

GM 21.A.126(a)(2) Production Inspection System - Identification of incoming materials and parts

3. processes, manufacturing techniques and methods of assembly affecting the quality and safety of the finished product are accomplished in accordance with specifications accepted by the competent authority;

GM No. 1 to 21.A.126(a)(3) Production Inspection System - List of specifications

GM No. 2 to 21.A.126(a)(3) Production Inspection System - Means of checking of the production processes

4. design changes, including material substitutions, have been approved under Subpart D or E and controlled before being incorporated in the finished product.

GM 21.A.126(a)(4) Production Inspection System - Applicable design/production data procedures

(b) The production inspection system required by point 21.A.125A(a), shall also be such as to ensure that:

1. parts in process are inspected for conformity with the applicable design data at points in production where accurate determinations can be made;

GM 21.A.126(b)(1) Production Inspection System - Inspection of parts in process

2. materials subject to damage and deterioration are suitably stored and adequately protected;

GM 21.A.126(b)(2) Production Inspection System - Suitable storage and protection

3. current design drawings are readily available to manufacturing and inspection personnel, and used when necessary;

GM 21.A.126(b)(3) Production Inspection System - Use of derived data instead of original design data

4. rejected materials and parts are segregated and identified in a manner that precludes installation in the finished product;

GM 21.A.126(b)(4) Production Inspection System - Segregation of rejected material

5. materials and parts that are withheld because of departures from design data or specifications, and that are to be considered for installation in the finished product, are subjected to an approved engineering and manufacturing review procedure. Those materials and parts determined by this procedure to be serviceable shall be properly identified and reinspected if rework or repair is necessary. Materials and parts rejected by this procedure shall be marked and disposed of to ensure that they are not incorporated in the final product;

GM 21.A.126(b)(5) Production Inspection System - Engineering and manufacturing review procedure

6. records produced under the production inspection system are maintained, identified with the completed product or part where practicable, and retained by the manufacturer in order to provide the information necessary to ensure the continued airworthiness of the product.

GM 21.A.126(b)(6) Production Inspection System - Recording and record keeping

21.A.127 Tests: aircraft

GM 21.A.127 Approved production ground and flight tests

(a) Each manufacturer of an aircraft manufactured under this Subpart shall establish an approved production ground and flight test procedure and check-off forms, and in accordance with those forms, test each aircraft produced, as a means of establishing relevant aspects of compliance with point 21.A.125A(a).

(b) Each production test procedure shall include at least the following:

1. a check on handling qualities;
2. a check on flight performance (using normal aircraft instrumentation);
3. a check on the proper functioning of all aircraft equipment and systems;
4. a determination that all instruments are properly marked, and that all placards and required flight manuals are installed after flight test;
5. a check of the operational characteristics of the aircraft on the ground;
6. a check on any other items peculiar to the aircraft being tested.

21.A.128 Tests: engines and propellers

GM No. 1 to 21.A.128 Acceptable functional test - Engines
GM No. 2 to 21.A.128 Acceptable functional test -Variable pitch propellers
GM No. 3 to 21.A.128 Acceptable functional test - Engines and Propellers

Each manufacturer of engines, or propellers manufactured under this Subpart shall subject each engine, or variable pitch propeller, to an acceptable functional test as specified in the type-certificate holder's documentation, to determine if it operates properly throughout the range of operation for which it is type-certificated, as a means of establishing relevant aspects of compliance with point 21.A.125A(a).

21.A.129 Obligations of the manufacturer

Each manufacturer of a product, part or appliance being manufactured under this Subpart shall:

(a) make each product, part or appliance available for inspection by the competent authority;

GM 21.A.129(a) Availability for inspection by the competent authority

(b) maintain at the place of manufacture the technical data and drawings necessary to determine whether the product conforms to the applicable design data;

(c) maintain the production inspection system that ensures that each product conforms to the applicable design data and is in condition for safe operation;

AMC No. 1 to 21.A.129(c) Obligations of the manufacturer - Conformity of prototype models and test specimens
AMC No. 2 to 21.A.129(c) Obligations of the manufacturer - Conformity with Applicable Design Data
AMC No. 3 to 21.A.129(c) Obligations of the manufacturer - Condition for safe operation

(d) provide assistance to the holder of the type-certificate, restricted type-certificate or design approval in dealing with any continuing airworthiness actions that are related to the products, parts or appliances that have been produced;

(e) establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to extract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;

(f)

1. report to the holder of the type-certificate, restricted type-certificate or design approval, all cases where products, parts or appliances have been released by the manufacturer and subsequently identified to have deviations from the applicable design data, and investigate with the holder of the type-certificate, restricted type-certificate or design approval to identify those deviations which could lead to an unsafe condition;
2. report to the Agency and the competent authority of the Member State the deviations which could lead to an unsafe condition identified according to point (1). Such reports shall be made in a form and manner established by the Agency under point 21.A.3A(b)(2) or accepted by the competent authority of the Member State;
3. where the manufacturer acts as supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data.

21.A.130 Statement of conformity

(a) Each manufacturer of a product, part or appliance manufactured under this Subpart shall raise a statement of conformity, an EASA Form 52 (see Appendix VIII), for complete aircraft, or EASA Form 1 (see Appendix I), for other products, parts or appliances. This statement shall be signed by an authorised person who holds a responsible position in the manufacturing organisation.

(b) A statement of conformity shall include all of the below:

AMC No. 1 to 21.A.130(b) Statement of Conformity for Complete Aircraft
AMC No. 2 to 21.A.130(b) Statement of Conformity for Products (other than complete aircraft), parts, appliances and materials - The Authorised Release Certificate (EASA Form 1)

1. for each product, part or appliance, a statement that the product, part or appliance conforms to the approved design data and is in condition for safe operation;
2. for each aircraft, a statement that the aircraft has been ground- and flight-checked in accordance with point 21A.127(a);
3. for each engine, or variable pitch propeller, a statement that the engine or variable pitch propeller has been subjected by the manufacturer to a final functional test in accordance with 21A.128;
4. additionally, in the case of environmental requirements:
   (i) a statement that the completed engine is in compliance with the applicable engine exhaust emissions requirements on the date of manufacture of the engine, and;
   (ii) a statement that the completed aeroplane is in compliance with the applicable CO2 emissions requirements on the date its first certificate of airworthiness is issued.

AMC 21A.130 (b) (4) Applicable emissions requirements
GM 21A.130 (b) (4) Definitions of engine type certification date and production date

(c) Each manufacturer of such a product, part or appliance shall:

AMC 21.A.130(c) Validation of the Statement of Conformity

1. upon the initial transfer by it of the ownership of such a product, part or appliance; or

AMC 21.A.130(c)(1) Initial transfer of ownership

2. upon application for the original issue of an aircraft certificate of airworthiness; or
3. upon application for the original issue of an airworthiness release document for an engine, a propeller, a part or appliance,

present a current statement of conformity, for validation by the competent authority.

(d) The competent authority shall validate by counter-signature the statement of conformity if it finds after inspection that the product, part or appliance conforms to the applicable design data and is in condition for safe operation.

<(EU) 2019/897, applies from 23.6.2019; (b) changed>

SUBPART G - PRODUCTION ORGANISATION APPROVAL

21.A.131 Scope

GM 21.A.131 Scope - Applicable design data
AMC-ELA No 1 to 21.A.131 Scope
GM-ELA No 1 to 21.A.131 Scope — General applicability of AMC-ELA and the use of AMC-ELA as a baseline outside its scope
GM-ELA No 2 to 21.A.131 Scope — AMC-ELA as a complete, self-contained set of AMC
GM-ELA No 3 to 21.A.131 Scope — Applicable design data
GM-ELA No 4 to 21.A.131 Scope — Explanation of terms used in AMC-ELA

This Subpart establishes:

(a) the procedure for the issuance of a production organisation approval for a production organisation showing conformity of products, parts and appliances with the applicable design data;

(b) the rules governing the rights and obligations of the applicant for, and holders of, such approvals.

21.A.133 Eligibility

GM 21.A.133(a) Eligibility - Approval appropriate for showing conformity

Any natural or legal person ('organisation') shall be eligible as an applicant for an approval under this Subpart. The applicant shall:

(a) justify that, for a defined scope of work, an approval under this Subpart is appropriate for the purpose of showing conformity with a specific design; and

(b) hold or have applied for an approval of that specific design; or

AMC No. 1 to 21.A.133(b) and (c) Eligibility - Link between design and production organisations
AMC No. 2 to 21.A.133(b) and (c) Eligibility - Link between design and production organisations

(c) have ensured, through an appropriate arrangement with the applicant for, or holder of, an approval of that specific design, satisfactory coordination between production and design.

AMC No. 1 to 21.A.133(b) and (c) Eligibility - Link between design and production organisations
AMC No. 2 to 21.A.133(b) and (c) Eligibility - Link between design and production organisations
AMC-ELA No 1 to 21.A.133(c) Eligibility — Link between design and production

21.A.134 Application

GM 21.A.134 Application - Application form and manner
GM-ELA No 1 to 21.A.134 Scope — Application

Each application for a production organisation approval shall be made to the competent authority in a form and manner established by that authority, and shall include an outline of the information required by point 21.A.143 and the terms of approval requested to be issued under point 21.A.151.

21.A.135 Issue of production organisation approval

An organisation shall be entitled to have a production organisation approval issued by the competent authority when it has demonstrated compliance with the applicable requirements under this Subpart.

21.A.139 Quality System

(a) The production organisation shall demonstrate that it has established and is able to maintain a quality system. The quality system shall be documented. This quality system shall be such as to enable the organisation to ensure that each product, part or appliance produced by the organisation or by its partners, or supplied from or subcontracted to outside parties, conforms to the applicable design data and is in condition for safe operation, and thus exercise the privileges set forth in point 21.A.163.

GM No. 1 to 21.A.139(a) Quality System
GM No. 2 to 21.A.139(a) Quality System - Conformity of supplied parts or appliances
GM-ELA No 1 to 21.A.139(a) Quality system
GM-ELA No 2 to 21.A.139(a) Quality system

(b) The quality system shall contain:

1. as applicable within the scope of approval, control procedures for:

GM 21.A.139(b)(1) Quality System - Elements of the quality system
GM-ELA No 1 to 21.A.139(b)(1) Quality system — Control procedures
GM-ELA No 2 to 21.A.139(b)(1) Conformity of supplied parts or appliances
AMC-ELA No 1 to 21.A.139(b)(1) Quality system — Control procedures

(i) document issue, approval, or change;
(ii) vendor and subcontractor assessment audit and control;

AMC No. 1 to 21.A.139(b)(1)(ii) Vendor and sub-contractor assessment, audit and control - Production Organisation Approval (POA) holder using documented arrangements with other parties for assessment and surveillance of a supplier.
AMC No. 2 to 21.A.139(b)(1)(ii) Vendor and sub-contractor assessment, audit and control - Production Organisation Approval (POA) holder using other party supplier certification

(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;
(iv) identification and traceability;
(v) manufacturing processes;
(vi) inspection and testing, including production flight tests;
(vii) calibration of tools, jigs, and test equipment;
(viii) non-conforming item control;
(ix) airworthiness coordination with the applicant for, or holder of, the design approval;
(x) records completion and retention;
(xi) personnel competence and qualification;
(xii) issue of airworthiness release documents;
(xiii) handling, storage and packing;
(xiv) internal quality audits and resulting corrective actions;
(xv) work within the terms of approval performed at any location other than the approved facilities;
(xvi) work carried out after completion of production but prior to delivery, to maintain the aircraft in a condition for safe operation;
(xvii) issue of permit to fly and approval of associated flight conditions.

The control procedures need to include specific provisions for any critical parts.

2. An independent quality assurance function to monitor compliance with, and adequacy of, the documented procedures of the quality system. This monitoring shall include a feedback system to the person or group of persons referred to in point 21.A.145(c)(2) and ultimately to the manager referred to in point 21.A.145(c)(1) to ensure, as necessary, corrective action.

AMC-ELA No 1 to 21.A.139(b)(2) Quality system — Independent quality assurance function
GM-ELA No 1 to 21.A.139(b)(2) Quality system — Independent quality assurance function

21.A.143 Exposition

AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b) Flight Test Operations Manual (FTOM)
AMC-ELA No 1 to 21.A.143 Exposition

GM-ELA No 1 to 21.A.143 Exposition

(a) The organisation shall submit to the competent authority a production organisation exposition providing the following information:

1. a statement signed by the accountable manager confirming that the production organisation exposition and any associated manuals which define the approved organisation's compliance with this Subpart will be complied with at all times;
2. the title(s) and names of managers accepted by the competent authority in accordance with point 21.A.145(c)(2);
3. the duties and responsibilities of the manager(s) as required by point 21.A.145(c)(2) including matters on which they may deal directly with the competent authority on behalf of the organisation;
4. an organisational chart showing associated chains of responsibility of the managers as required by point 21.A.145(c)(1) and (2);
5. a list of certifying staff as referred to in point 21.A.145(d);
6. a general description of man-power resources;
7. a general description of the facilities located at each address specified in the production organisation's certificate of approval;
8. a general description of the production organisation's scope of work relevant to the terms of approval;
9. the procedure for the notification of organisational changes to the competent authority;
10. the amendment procedure for the production organisation exposition;
11. a description of the quality system and the procedures as required by point 21.A.139(b)(1);
12. a list of those outside parties referred to in point 21.A.139(a).
13.

AMC-ELA No 1 to 21.A.143(a)(13) Exposition — Policies and procedures related to flight test
AMC-ELA No 2 to 21.A.143(a)(13) Exposition — Policies and procedures related to flight test

(b) The production organisation exposition shall be amended as necessary to remain an up-to-date description of the organisation, and copies of any amendments shall be supplied to the competent authority.

21.A.145 Approval requirements

The production organisation shall demonstrate, on the basis of the information submitted in accordance with point 21.A.143 that:

(a) with regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, and general organisation are adequate to discharge obligations under point 21.A.165;

GM 21.A.145(a) Approval Requirements
AMC-ELA No 1 to 21.A.145(a) Approval requirements — General

(b) with regard to all necessary airworthiness and environmental data:

AMC-ELA No 1 to 21.A.145(b) Approval requirements — Airworthiness, noise, fuel venting and exhaust emissions data

1. the production organisation is in receipt of such data from the Agency, and from the holder of, or applicant for, the type-certificate, restricted type-certificate or design approval, including any exemption granted against the CO2 production cut-off requirements, to determine conformity with the applicable design data;
2. the production organisation has established a procedure to ensure that airworthiness and environmental data are correctly incorporated in its production data and,

GM 21.A.145(b)(2) Approval Requirements - Airworthiness, noise, fuel venting and exhaust emissions /production data procedures

3. such data are kept up to date and made available to all personnel who need access to such data to perform their duties.

(c) with regard to management and staff:

AMC-ELA No 1 to 21.A.145(c) Approval requirements — Management and staff

1. a manager has been nominated by the production organisation, and is accountable to the competent authority. His or her responsibilities within the organisation shall consist of ensuring that all production is performed to the required standards and that the production organisation is continuously in compliance with the data and procedures identified in the exposition referred to in point 21.A.143;

GM 21.A.145(c)(1) Approval Requirements - Accountable manager

2. a person or group of persons have been nominated by the production organisation to ensure that the organisation is in compliance with the requirements of this Annex (Part 21), and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in point (1). The person(s) nominated shall be able to show the appropriate knowledge, background and experience to discharge their responsibilities;

GM 21.A.145(c)(2) Approval Requirements - Responsible managers

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 production organisation in respect of airworthiness and environmental data matters.

(d) with regard to certifying staff, authorised by the production organisation to sign the documents issued under point 21.A.163 under the scope or terms of approval:

1. the knowledge, background (including other functions in the organisation), and experience of the certifying staff are appropriate to discharge their allocated responsibilities;

AMC 21.A.145(d)(1) Approval Requirements - Certifying staff

AMC-ELA No 1 to 21.A.145(d)(1) Approval requirements — Certifying staff

2. the production organisation maintains a record of all certifying staff which shall include details of the scope of their authorisation;

AMC 21.A.145(d)(2) Approval Requirements - Record of certifying staff

AMC-ELA No 1 to 21.A.145(d)(2) Approval requirements — Records of certifying staff

3. certifying staff are provided with evidence of the scope of their authorisation.

AMC 21.A.145(d)(3) Approval requirements - Evidence of authorisation

AMC-ELA No 1 to 21.A.145(d)(3) Approval requirements — Evidence of authorisation

<(EU) 2019/897, applies from 23.6.2019; (b), (c) rewrite>

21.A.147 Changes to the approved production organisation

GM-ELA No 1 to 21.A.147 Changes to the approved production organisation

(a) After the issue of a production organisation approval, each change to the approved production organisation that is significant to the showing of conformity or to the airworthiness and environmental characteristics of the product, part or appliance, particularly changes to the quality system, shall be approved by the competent authority. An application for approval shall be submitted in writing to the competent authority and the organisation shall demonstrate to the competent authority, before implementation of the change, that it complies with this Subpart.

(b) The competent authority shall establish the conditions under which a production organisation approved under this Subpart may operate during such changes unless the competent authority determines that the approval should be suspended.

<(EU) 2019/897, applies from 23.6.2019; (a) small changes>

21.A.148 Changes of location

AMC 21.A.148 Changes of location - Management during change of location

GM-ELA No 1 to 21.A.148 Changes of location

A change of the location of the manufacturing facilities of the approved production organisation shall be deemed of significance and therefore shall comply with point 21.A.147.

21.A.149 Transferability

GM 21.A.149 Transferability

Except as a result of a change in ownership, which is deemed significant for the purposes of point 21.A.147, a production organisation approval is not transferable.

21.A.151 Terms of approval

GM 21.A.151 Terms of approval - Scope and categories

The terms of approval shall identify the scope of work, the products or the categories of parts and appliances, or both, for which the holder is entitled to exercise the privileges under point 21.A.163.

Those terms shall be issued as part of a production organisation approval.

21.A.153 Changes to the terms of approval

AMC 21.A.153 Changes to the terms of approval - Application for a change to the terms of approval

AMC-ELA No 1 to 21.A.153 Changes to the terms of approval — Application for a change to the terms of approval

Each change to the terms of approval shall be approved by the competent authority. An application for a change to the terms of approval shall be made in a form and manner established by the competent authority. The applicant shall comply with the applicable requirements of this Subpart.

21.A.157 Investigations

GM 21.A.157 Investigations - Arrangements

GM-ELA No 1 to 21.A.157 Investigations — Arrangements

A production organisation shall make arrangements that allow the competent authority to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance and continued compliance with the applicable requirements of this Subpart.

21.A.158 Findings

GM-ELA No 1 to 21.A.158 Findings

(a) When objective evidence is found showing non-compliance of the holder of a production organisation approval with the applicable requirements of this Annex I (Part 21), the finding shall be classified as follows:
   1. a level one finding is any non-compliance with this Annex I (Part 21) which could lead to uncontrolled non-compliances with applicable design data and which could affect the safety of the aircraft;
   2. a level two finding is any non-compliance with this Annex I (Part 21) which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under point (a).

(c) After receipt of notification of findings according to point 21.B.225,
   1. in case of a level one finding, the holder of the production organisation approval shall demonstrate corrective action to the satisfaction of the competent authority within a period of no more than 21 working days after written confirmation of the finding;
   2. in case of level two findings, the corrective action period granted by the competent authority shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and subject to the nature of the finding the competent authority may extend the three months period subject to the provision of a satisfactory corrective action plan agreed by the competent authority;
   3. a level three finding shall not require immediate action by the holder of the production organisation approval.

(d) In case of level one or level two findings, the production organisation approval may be subject to a partial or full limitation, suspension or revocation under point 21.B.245. The holder of the production organisation approval shall provide confirmation of receipt of the notice of limitation, suspension or revocation of the production organisation approval in a timely manner.

21.A.159 Duration and continued validity

(a) A production organisation approval shall be issued for an unlimited duration. It shall remain valid unless:
   1. the production organisation fails to demonstrate compliance with the applicable requirements of this Subpart; or
   2. the competent authority is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with point 21.A.157; or
   3. there is evidence that the production organisation cannot maintain satisfactory control of the manufacture of products, parts or appliances under the approval; or

GM 21.A.159(a)(3) Evidence of a lack of satisfactory control

   4. the production organisation no longer meets the requirements of point 21.A.133; or
   5. the certificate has been surrendered or revoked under point 21.B.245.

(b) Upon surrender or revocation, the certificate shall be returned to the competent authority.

21.A.163 Privileges

Pursuant to the terms of approval issued under point 21.A.135, the holder of a production organisation approval may:

(a) perform production activities under this Annex I (Part 21);

(b) in the case of complete aircraft and upon presentation of a statement of conformity (EASA Form 52) under point 21.A.174, obtain an aircraft certificate of airworthiness and a noise certificate without further showing;

(c) in the case of other products, parts or appliances, issue authorised release certificates (EASA Form 1) without further showing;

AMC No 1 to 21.A.163(c) Computer generated signature and electronic exchange of the EASA Form 1

AMC No 2 to 21.A.163(c) Completion of the EASA Form 1

AMC-ELA No 1 to 21.A.163(c) Privileges to issue authorised release certificates

(d) maintain a new aircraft that it has produced and issue a certificate of release to service (EASA Form 53) in respect of that maintenance;

AMC 21.A.163(d) Privileges - Maintenance

(e) under procedures agreed with its competent authority for production, for an aircraft it has produced and when the production organisation itself is controlling under its POA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight, to issue a permit to fly in accordance with point 21.A.711(c) including approval of the flight conditions in accordance with point 21.A.710(b).

AMC 21.A.163(e) Procedure for the issue of a permit to fly including approval of the flight conditions

21.A.165 Obligations of the holder

The holder of a production organisation approval shall:

(a) ensure that the production organisation exposition furnished in accordance with point 21.A.143 and the documents to which it refers, are used as basic working documents within the organisation;

GM 21.A.165(a) Obligations of the holder - Basic working document

AMC-ELA No 1 to 21.A.165(a);(b) Obligations of the holder — Basic working document

(b) maintain the production organisation in conformity with the data and procedures approved for the production organisation approval;

AMC-ELA No 1 to 21.A.165(a);(b) Obligations of the holder — Basic working document

(c)

GM No. 1 to 21.A.165(c) Obligations of the holder - Conformity of prototype models and test specimens

GM No. 2 to 21.A.165(c) Obligations of holder - Conformity with type design

GM No. 3 to 21.A.165(c) Obligations of the holder - Condition for safe operation

GM-ELA No 1 to 21.A.165(c) Obligations of the holder

1. determine that each completed aircraft conforms to the type design and is in condition for safe operation prior to submitting statements of conformity to the competent authority; or
2. determine that other products, parts or appliances are complete and conform to the approved design data and are in a condition for safe operation before issuing an EASA Form 1 to certify conformity to approved design data and condition for safe operation;
3. additionally, in the case of engines, determine that the completed engine is in compliance with the applicable emissions requirements on the date of manufacture of the engine;

AMC 21A.165(c)(3) Applicable emissions requirements

GM 21A.165(c)(3) Definitions of engine type certification date and production date

4. determine that other products, parts or appliances conform to the applicable data before issuing an EASA Form 1 as a conformity certificate;

(d) record all details of work carried out;

GM No. 4 to 21A.165(c) Airworthiness Release or Conformity Certificate

GM 21.A.165(d) and (h) Obligations of the holder - Recording and archiving system

AMC-ELA No 1 to 21.A.165(d) Obligations of the holder — Recording and archiving system

AMC-ELA No 1 to 21.A.165(d);(h) Obligations of the holder — Recording and archiving system

(e) establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to ex-

tract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;

AMC-ELA No 1 to 21.A.165(e);(f) Obligations of the holder — Reporting to the design holder

(f)

AMC-ELA No 1 to 21.A.165(e);(f) Obligations of the holder — Reporting to the design holder

1. report to the holder of the type-certificate or design approval, all cases where products, parts or appliances have been released by the production organisation and subsequently identified to have possible deviations from the applicable design data, and investigate with the holder of the type-certificate or design approval in order to identify those deviations which could lead to an unsafe condition;
2. report to the Agency and the competent authority of the Member State the deviations which could lead to an unsafe condition identified according to point (1). Such reports shall be made in a form and manner established by the Agency under point 21.A.3A(b)(2) or accepted by the competent authority of the Member State;
3. where the holder of the production organisation approval is acting as a supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data;

(g) provide assistance to the holder of the type-certificate or design approval in dealing with any continuing airworthiness actions that are related to the products parts or appliances that have been produced;

AMC-ELA No 1 to 21.A.165(g) Obligations of the holder — Continuing airworthiness assistance

(h) establish an archiving system incorporating requirements imposed on its partners, suppliers and subcontractors, ensuring conservation of the data used to justify conformity of the products, parts or appliances. Such data shall be held at the disposal of the competent authority and be retained in order to provide the information necessary to ensure the continuing airworthiness of the products, parts or appliances;

GM 21.A.165(d) and (h) Obligations of the holder - Recording and archiving system

AMC-ELA No 1 to 21.A.165(d);(h) Obligations of the holder — Recording and archiving system

(i) where, under its terms of approval, the holder issues a certificate of release to service, determine that each completed aircraft has been subjected to necessary maintenance and is in condition for safe operation, prior to issuing the certificate;

(j) where applicable, under the privilege of point 21.A.163(e), determine the conditions under which a permit to fly can be issued;

(k) where applicable, under the privilege of point 21.A.163(e), establish compliance with points 21.A.711(c) and (e) before issuing a permit to fly to an aircraft.

SUBPART H - CERTIFICATES OF AIRWORTHINESS AND RESTRICTED CERTIFICATES OF AIRWORTHINESS

21.A.171 Scope

This Subpart establishes the procedure for issuing airworthiness certificates.

21.A.172 Eligibility

Any natural or legal person under whose name an aircraft is registered or will be registered in a Member State ('Member State of registry'), or its representative, shall be eligible as an applicant for an airworthiness certificate for that aircraft under this Subpart.

21.A.173 Classification

Airworthiness certificates shall be classified as follows:

(a) certificates of airworthiness shall be issued to aircraft which conform to a type-certificate that has been issued in accordance with this Annex I (Part 21);

(b) restricted certificates of airworthiness shall be issued to aircraft:

1. which conform to a restricted type-certificate that has been issued in accordance with this Annex I (Part 21); or
2. which have been shown to the Agency to comply with specific airworthiness specifications ensuring adequate safety.

21.A.174 Application

(a) Pursuant to point 21.A.172, an application for an airworthiness certificate shall be made in a form and manner established by the competent authority of the Member State of registry.

(b) Each application for a certificate of airworthiness or restricted certificate of airworthiness shall include:

1. the class of airworthiness certificate applied for;
2. with regard to new aircraft:
   (i) a statement of conformity:
   - issued under point 21.A.163(b), or
   - issued under point 21.A.130 and validated by the competent authority, or
   - for an imported aircraft, a statement signed by the exporting authority that the aircraft conforms to a design approved by the Agency;

   (ii) a weight and balance report with a loading schedule and;
   (iii) the flight manual, when required by the applicable certification specifications for the particular aircraft;
3. with regard to used aircraft:
   (i) originating from a Member State, an airworthiness review certificate issued in accordance with Part M;
   (ii) originating from a non-member State:
   - a statement by the competent authority of the State where the aircraft is, or was, registered, reflecting the airworthiness status of the aircraft on its register at time of transfer,
   - a weight and balance report with a loading schedule,
   - the flight manual when such material is required by the applicable airworthiness code for the particular aircraft,
   - historical records to establish the production, modification, and maintenance standard of the aircraft, including all limitations associated with a restricted certificate of airworthiness under point 21.B.327,
   - a recommendation for the issuance of a certificate of airworthiness or restricted certificate of airworthiness and an airworthiness review certificate following an airworthiness review in accordance with Part M; and

- the date on which the first certificate of airworthiness was issued and, if the standards of Annex 16 Volume III apply, the CO_2 metric value data.

(c) Unless otherwise agreed, the statements referred to in points (b)(2)(i) and (b)(3)(ii) shall be issued no more than 60 days before presentation of the aircraft to the competent authority of the Member State of registry.

<(EU) 2019/897, applies from 23.6.2019; (b) small changes>

21.A.175 Language

The manuals, placards, listings, and instrument markings and other necessary information required by applicable certification specifications shall be presented in one or more of the official language(s) of the European Union acceptable to the competent authority of the Member State of registry.

21.A.177 Amendment or modification

An airworthiness certificate may be amended or modified only by the competent authority of the Member State of registry.

21.A.179 Transferability and re-issuance within Member States

(a) Where ownership of an aircraft has changed:

1. if it remains on the same register, the certificate of airworthiness, or the restricted certificate of airworthiness conforming to a restricted type-certificate only, shall be transferred together with the aircraft;
2. if the aircraft is registered in another Member State, the certificate of airworthiness, or the restricted certificate of airworthiness conforming to a restricted type-certificate only, shall be issued:
   (i) upon presentation of the former certificate of airworthiness and of a valid airworthiness review certificate issued under Part M; and
   (ii) when satisfying point 21.A.175.

(b) Where ownership of an aircraft has changed, and the aircraft has a restricted certificate of airworthiness not conforming to a restricted type-certificate, the airworthiness certificates shall be transferred together with the aircraft provided the aircraft remains on the same register, or issued only with the formal agreement of the competent authority of the Member State of registry to which it is transferred.

21.A.180 Inspections

The holder of the airworthiness certificate shall provide access to the aircraft for which that airworthiness certificate has been issued upon request by the competent authority of the Member State of registry.

21.A.181 Duration and continued validity

(a) An airworthiness certificate shall be issued for an unlimited duration. It shall remain valid subject to:

1. compliance with the applicable type-design and continuing airworthiness requirements; and
2. the aircraft remaining on the same register; and
3. the type-certificate or restricted type-certificate under which it is issued not being previously invalidated under point 21.A.51;
4. the certificate not being surrendered or revoked under point 21.B.330.

(b) Upon surrender or revocation, the certificate shall be returned to the competent authority of the Member State of registry.

21.A.182 Aircraft identification

Each applicant for an airworthiness certificate under this Subpart shall demonstrate that its aircraft is identified in accordance with Subpart Q.

SUBPART I - NOISE CERTIFICATES

21.A.201 Scope

This Subpart establishes the procedure for issuing noise certificates.

21.A.203 Eligibility

Any natural or legal person under whose name an aircraft is registered or will be registered in a Member State (Member State of registry), or its representative, shall be eligible as an applicant for a noise certificate for that aircraft under this Subpart.

21.A.204 Application

(a) Pursuant to point 21.A.203, an application for a noise certificate shall be made in a form and manner established by the competent authority of the Member State of registry.

(b) Each application shall include:

1. with regard to new aircraft:
   (i) a statement of conformity:
   - issued under point 21.A.163(b), or
   - issued under point 21.A.130 and validated by the competent authority, or
   - for an imported aircraft, a statement, signed by the exporting authority that the aircraft conforms to a design approved by the Agency; and

   (ii) the noise information determined in accordance with the applicable noise requirements;
2. with regard to used aircraft:
   (i) the noise information determined in accordance with the applicable noise requirements; and
   (ii) historical records to establish the production, modification, and maintenance standard of the aircraft.

(c) Unless otherwise agreed, the statements referred to in point (b)(1) shall be issued no more than 60 days before presentation of the aircraft to the competent authority of the Member State of registry.

21.A.207 Amendment or modification

A noise certificate may be amended or modified only by the competent authority of the Member State of registry.

21.A.209 Transferability and re-issuance within Member States

Where ownership of an aircraft has changed:

(a) if the aircraft remains on the same register, the noise certificate shall be transferred together with the aircraft; or

(b) if the aircraft moves to the register of another Member State, the noise certificate shall be issued upon presentation of the former noise certificate.

21.A.210 Inspections

The holder of the noise certificate shall provide access to the aircraft for which that noise certificate has been issued upon request by the competent authority of the Member State of registry or by the Agency for inspection.

21.A.211 Duration and continued validity

(a) A noise certificate shall be issued for an unlimited duration. It shall remain valid subject to:

1. compliance with the applicable type-design, environmental protection and continuing airworthiness requirements; and
2. the aircraft remaining on the same register; and
3. the type-certificate or restricted type-certificate under which it is issued not being previously invalidated under point 21.A.51;
4. the certificate not being surrendered or revoked under point 21.B.430.

(b) Upon surrender or revocation, the certificate shall be returned to the competent authority of the Member State of registry.

SUBPART J - DESIGN ORGANISATION APPROVAL

21.A.231 Scope

AMC-ELA No 1 to 21.A.231 Scope
GM-ELA No 1 to 21.A.231 Scope
GM-ELA No 2 to 21.A.231 Scope — AMC-ELA as a complete, self-contained set of AMC
GM-ELA No 3 to 21.A.231 Scope — Explanation of terms used in AMC-ELA

This Subpart establishes the procedure for the approval of design organisations and rules governing the rights and obligations of applicants for, and holders of, such approvals.

21.A.233 Eligibility

Any natural or legal person ('organisation') shall be eligible as an applicant for an approval under this Subpart

(a) in accordance with points 21.A.14, 21.A.112B, 21.A.432B or 21.A.602B; or

(b) for approval of minor changes or minor repair design, when requested for the purpose of obtaining privileges under point 21.A.263.

21.A.234 Application

AMC-ELA No 1 to 21.A.234 Application

Each application for a design organisation approval shall be made in a form and manner established by the Agency and shall include an outline of the information required by point 21.A.243, and the terms of approval requested to be issued under point 21.A.251.

21.A.235 Issue of design organisation approval

An organisation shall be entitled to have a design organisation approval issued by the Agency when it has demonstrated compliance with the applicable requirements under this Subpart.

21.A.239 Design assurance system

(a) The design organisation shall demonstrate that it has established and is able to maintain a design assurance system for the control and supervision of the design, and of design changes, of products, parts and appliances covered by the application. This design assurance system shall be such as to enable the organisation:

GM No. 1 to 21.A.239(a) Design assurance system
GM No. 2 to 21.A.239(a) Design assurance system for minor changes to type design or minor repairs to products
AMC-ELA No 1 to 21.A.239(a) Design assurance system — Definition
AMC-ELA No 2 to 21.A.239(a) Design assurance system — Ensuring compliance
AMC-ELA No 3 to 21.A.239(a) Design assurance system — Discharge of responsibilities
AMC-ELA No 4 to 21.A.239(a) Design assurance system — Independent system monitoring

1. to ensure that the design of the products, parts and appliances or the design change thereof, comply with the applicable type-certification basis, the applicable operational suitability data certification basis and environmental protection requirements; and
2. to ensure that its responsibilities are properly discharged in accordance with:
   (i) the appropriate provisions of this Annex I (Part 21); and
   (ii) the terms of approval issued under point 21.A.251;
3. to independently monitor the compliance with, and adequacy of, the documented procedures of the system. This monitoring shall include a feed-back system to a person or a group of persons having the responsibility to ensure corrective actions.

AMC 21.A.239(a)(3) Independent system monitoring

(b) The design assurance system shall include an independent checking function of the showings of compliance on the basis of which the organisation submits compliance statements and associated documentation to the Agency.

AMC 21.A.239(b) Independent checking function of the demonstration of compliance

AMC-ELA No 1 to 21.A.239(b) Design assurance system — Independent checking function

(c) The design organisation shall specify the manner in which the design assurance system accounts for the acceptability of the parts or appliances designed or the tasks performed by partners or subcontractors according to methods which are the subject of written procedures.

GM 21.A.239(c) Design assurance system

AMC-ELA No 1 to 21.A.239(c) Design assurance system — Acceptability of tasks performed by external parties

21.A.243 Data

AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b) Flight Test Operations Manual (FTOM)

AMC-ELA No 1 to 21.A.243 Data — Design organisation handbook

AMC-ELA No 2 to 21.A.243 Data — Policies and procedures in relation to flight tests

(a) The design organisation shall furnish a handbook to the Agency describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.

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

AMC No. 2 to 21.A.243(a) Data requirements - Model content of handbook for organisations designing minor changes to type design or minor repairs to products

(b) Where any parts or appliances or any changes to the products are designed by partner organisations or subcontractors, the handbook shall include a statement of how the design organisation is able to give, for all parts and appliances, the assurance of compliance required by point 21.A.239(b), and shall contain, directly or by cross-reference, descriptions and information on the design activities and organisation of those partners or subcontractors, as necessary to establish this statement.

(c) The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the Agency.

(d) The design organisation shall furnish a statement of the qualifications and experience of the management staff and other persons responsible for making decisions affecting airworthiness and environmental protection in the organisation.

GM No. 1 to 21.A.243(d) Statement of qualifications and experience

GM No. 2 to 21.A.243(d) Data requirements - Statement of the qualification and experience - Organisations designing minor changes to type design or minor repairs to products

AMC-ELA No 1 to 21.A.243(d) Data — Statement of qualifications and experience

21.A.245 Approval requirements

GM No. 1 to 21.A.245 Requirements for approval

GM No. 2 to 21.A.245 Requirements for approval - Organisations designing minor changes to type design or minor repairs to products

AMC-ELA No 1 to 21.A.245 Approval requirements

The design organisation shall demonstrate, on the basis of the information submitted in accordance with point 21.A.243 that, in addition to complying with point 21.A.239:

(a) the staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to be able to discharge their allocated responsibilities and these, together with the accommodation, facilities and equipment are adequate to enable the staff to achieve the airworthiness, operational suitability and environmental protection objectives for the product;

(b) there is full and efficient coordination between departments and within departments in respect of airworthiness, operational suitability and environmental protection matters.

21.A.247 Changes in design assurance system

GM 21.A.247 Significant changes in the design assurance system

GM-ELA No 1 to 21.A.247 Changes in design assurance system

After the issue of a design organisation approval, each change to the design assurance system that is significant to the showing of compliance or to the airworthiness, operational suitability and environmental protection of the product, shall be approved by the Agency. An application for approval shall be submitted in writing to the Agency and the design organisation shall demonstrate to the Agency, on the basis of submission of proposed changes to the

handbook, and before implementation of the change, that it will continue to comply with this Subpart after implementation.

21.A.249 Transferability

Except as a result of a change in ownership, which is deemed significant for the purposes of point 21.A.247, a design organisation approval is not transferable.

21.A.251 Terms of approval

GM No. 1 to 21.A.251 Terms of approval
GM No. 2 to 21.A.251 Terms of approval - Organisations designing minor changes to type design or minor repairs to products
GM-ELA No 1 to 21.A.251 Terms of approval

The terms of approval shall identify the types of design work, the categories of products, parts and appliances for which the design organisation holds a design organisation approval, and the functions and duties that the organisation is approved to perform with regard to the airworthiness, operational suitability and environmental characteristics of products. For design organisation approval covering type-certification or European Technical Standard Order (ETSO) authorisation for auxiliary power units (APUs), the terms of approval shall contain in addition the list of products or APUs. Those terms shall be issued as part of a design organisation approval.

<(EU) 2019/897, applies from 23.6.2019; small changes>

21.A.253 Changes to the terms of approval

AMC-ELA No 1 to 21.A.253 Changes to the terms of approval

Each change to the terms of approval shall be approved by the Agency. An application for a change to the terms of approval shall be made in a form and manner established by the Agency. The design organisation shall comply with the applicable requirements of this Subpart.

21.A.257 Investigations

GM-ELA No 1 to 21.A.257 Investigations — Arrangements

(a) The design organisation shall make arrangements that allow the Agency to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance and continued compliance with the applicable requirements of this Subpart.

GM 21.A.257(a) Investigations

(b) The design organisation shall allow the Agency to review any report and make any inspection and perform or witness any flight and ground test necessary to check the validity of the compliance statements submitted by the applicant under point 21.A.239(b).

21.A.258 Findings

(a) When objective evidence is found showing non-compliance of the holder of a design organisation approval with the applicable requirements of this Annex I (Part 21), the finding shall be classified as follows:
   1. a level one finding is any non-compliance with this Annex I (Part 21) which could lead to uncontrolled non-compliances with applicable requirements and which could affect the safety of the aircraft;
   2. a level two finding is any non-compliance with this Annex I (Part 21) which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under point (a).

(c) After receipt of notification of findings under the applicable administrative procedures established by the Agency,
   1. in case of a level one finding, the holder of the design organisation approval shall demonstrate corrective action to the satisfaction of the Agency within a period of no more than 21 working days after written confirmation of the finding;
   2. in case of level two findings, the corrective action period granted by the Agency shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and subject to the nature of the finding the Agency may extend the three months period subject to the provision of a satisfactory corrective action plan agreed by the Agency;

3. a level three finding shall not require immediate action by the holder of the design organisation approval.

(d) In case of level one or level two findings, the design organisation approval may be subject to a partial or full suspension or revocation under the applicable administrative procedures established by the Agency. The holder of the design organisation approval shall provide confirmation of receipt of the notice of suspension or revocation of the design organisation approval in a timely manner.

21.A.259 Duration and continued validity

(a) A design organisation approval shall be issued for an unlimited duration. It shall remain valid unless:
1. the design organisation fails to demonstrate compliance with the applicable requirements of this Subpart; or
2. the Agency is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with point 21.A.257; or
3. there is evidence that the design assurance system cannot maintain satisfactory control and supervision of the design of products or changes thereof under the approval; or
4. the certificate has been surrendered or revoked under the applicable administrative procedures established by the Agency.

(b) Upon surrender or revocation, the certificate shall be returned to the Agency.

21.A.263 Privileges

AMC-ELA No 1 to 21.A.263 Privileges

(a) (Reserved)

(b) (Reserved)

(c) A holder of a design organisation approval shall be entitled, within the scope of its terms of approval, as established by the Agency, and under the relevant procedures of the design assurance system:

1. to classify changes to a type-certificate or to a supplemental type-certificate and repair designs as “major” or “minor”;

AMC No. 1 to 21.A.263(c)(1) Procedure for the classification of changes to type certificate TC and repairs as minor or major

AMC No. 2 to 21.A.263(c)(1) Privileges - Organisations designing minor changes to a type certificate (CT) or minor repairs to products : classification procedure

2. to approve minor changes to a type-certificate or to a supplemental type-certificate and minor repair designs;

AMC No. 1 to 21.A.263(c)(2) Procedure for the approval of minor changes to a type certificate (CT) or minor repairs

AMC No. 2 to 21.A.263(c)(2) - Organisations designing minor changes to a type certificate (TC) or minor repairs to products : procedure for the approval of minor changes to a type certificate (TC) or minor repairs

3. (Reserved);

GM 21.A.263(c)(3) Issue of information or instructions

4. (Reserved);

GM 21.A.263(c)(4) Procedure for the approval of minor revisions to the aircraft flight manual

5. to approve certain major repair designs under Subpart M to products or auxiliary power units (APUs);
6. to approve for certain aircraft the flight conditions under which a permit to fly can be issued in accordance with point 21.A.710(a)(2), except for permits to fly to be issued for the purpose of point 21.A.701(a)(15);

AMC 21.A.263(c)(6) Procedure for the approval of the conditions for issue of a permit to fly

7. to issue a permit to fly in accordance with point 21.A.711(b) for an aircraft it has designed or modified, or for which it has approved, in accordance with point 21.A.263(c)(6), the flight conditions under which the permit to fly can be issued, and when the holder of a design organisation approval itself:
   (i) controls the configuration of the aircraft, and
   (ii) attests conformity with the design conditions approved for the flight;

AMC 21.A.263(c)(7) Procedure for the issue of a permit to fly

8. to approve certain major changes to a type-certificate under Subpart D; and
9. to issue certain supplemental type-certificates under Subpart E and approve certain major changes to those certificates.

<(EU) 2019/897, applies from 23.6.2019; changes>

21.A.265 Obligations of the holder

The holder of a design organisation approval shall:

(a) maintain the handbook in conformity with the design assurance system;

AMC 21.A. 265(a) Administration of the Handbook

AMC-ELA No 1 to 21.A.265(a) Obligations of the holder — Administration of the design organisation handbook

(b) ensure that this handbook is used as a basic working document within the organisation;

GM 21.A.265(b) Use of the Handbook

AMC-ELA No 1 to 21.A.265(b) Obligations of the holder — Use of the design organisation handbook as a basic working document

(c) determine that the design of products, or changes or repairs thereof, as applicable, comply with applicable requirements and have no unsafe feature;

AMC-ELA No 1 to 21.A.265(c) Obligations of the holder — Determination of compliance

(d) except for minor changes or repairs approved under the privilege of point 21.A.263, provide to the Agency statements and associated documentation confirming compliance with point (c);

(e) provide to the Agency information or instructions related to required actions under point 21.A.3B;

AMC-ELA No 1 to 21.A.265(e) Obligations of the holder — Providing information in response to airworthiness directives

(f) where applicable, under the privilege of point 21.A.263(c)(6), determine the conditions under which a permit to fly can be issued;

(g) where applicable, under the privilege of point 21.A.263(c)(7), establish compliance with points 21.A.711(b) and (e) before issuing a permit to fly to an aircraft.

SUBPART K - PARTS AND APPLIANCES

21.A.301 Scope

This Subpart establishes the procedure relating to the approval of parts and appliances.

21.A.303 Compliance with applicable requirements

The showing of compliance of parts and appliances to be installed in a type-certificated product shall be made:

(a) in conjunction with the type-certification procedures of Subpart B, D or E for the product in which it is to be installed; or

(b) where applicable, under the ETSO authorisation procedures of Subpart O; or

(c) in the case of standard parts, in accordance with officially recognised Standards.

AMC 21.A.303(c) Standard Parts

GM No. 2 to 21.A.303(c) Officially recognised Standards

21.A.305 Approval of parts and appliances

In all cases where the approval of a part or appliance is explicitly required by Union law or Agency measures, the part or appliance shall comply with the applicable ETSO or with the specifications recognised as equivalent by the Agency in the particular case.

21.A.307 Release of parts and appliances for installation

A part or appliance shall be eligible for installation in a type-certificated product when it is in a condition for safe operation, and it is:

(a) accompanied by an authorised release certificate (EASA Form 1), certifying that the item was manufactured in conformity to approved design data and is marked in accordance with Subpart Q; or

(b) a standard part; or

(c) in the case of ELA1 or ELA2 aircraft, a part or appliance that is:

1. not life-limited, nor part of the primary structure, nor part of the flight controls;
2. manufactured in conformity to applicable design;
3. marked in accordance with Subpart Q;
4. identified for installation in the specific aircraft;
5. to be installed in an aircraft for which the owner has verified compliance with the conditions 1 through 4 and has accepted responsibility for this compliance.

(SUBPART L - NOT APPLICABLE)

SUBPART M - REPAIRS

21.A.431 A Scope

(a) This Subpart establishes the procedure for the approval of repair design, and establishes the rights and obligations of the applicants for, and holders of, those approvals.

GM 21.A.431(a) Scope

(b) This Subpart defines standard repairs that are not subject to an approval process under this Subpart.

(c) A 'repair' means elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part or appliance.

(d) Elimination of damage by replacement of parts or appliances without the necessity for design activity shall be considered as a maintenance task and shall therefore require no approval under this Annex I (Part 21).

GM 21.A.431(d) Repairs to ETSO articles other than an APU

(e) A repair to an ETSO article other than an Auxiliary Power Unit (APU) shall be treated as a change to the ETSO design and shall be processed in accordance with point 21.A.611.

21.A.431B Standard repairs

GM 21.A.431B Standard repairs — Certification Specifications

(a) Standard repairs are repairs:
  (1) in relation to:
    (i) aeroplanes of 5 700 kg Maximum Take-Off Mass (MTOM) or less;
    (ii) rotorcraft of 3 175 kg MTOM or less;
    (iii) sailplanes and powered sailplanes, balloons and airships as defined in ELA1 or ELA2.
  (2) that follow design data included in certification specifications issued by the Agency, containing acceptable methods, techniques and practices for carrying out and identifying standard repairs, including the associated instructions for continuing airworthiness; and
  (3) that are not in conflict with TC holders data.

(b) Points 21.A.432A to 21.A.451 are not applicable to standard repairs.

21.A.432A Eligibility

(a) Any natural or legal person that has demonstrated, or is in the process of demonstrating, its capability under point 21.A.432B shall be eligible as an applicant for a major repair design approval under the conditions laid down in this Subpart.

(b) Any natural or legal person shall be eligible to apply for approval of a minor repair design.

21.A.432B Demonstration of capability

(a) An applicant for a major repair design approval shall demonstrate its capability by holding a design organisation approval, issued by the Agency in accordance with Subpart J.

(b) By way of derogation from point (a), as an alternative procedure to demonstrate its capability, an applicant may seek Agency agreement for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Subpart.

AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b) Flight Test Operations Manual (FTOM)

(c) By way of derogation from points (a) and (b), an applicant may seek the agreement of the Agency for the approval of a certification programme setting out the specific design practices, resources and sequence of activities necessary to comply with this Annex I (Part 21) for a repair on a product defined in point 21.A.14(c).

21.A.433 Repair design

(a) The applicant for approval of a repair design shall:

AMC 21.A.433 (a) and 21.A.447 Repair design and record keeping

1. demonstrate compliance with the type-certification basis and environmental protection requirements incorporated by reference in the type-certificate or supplemental type-certificate or APU ETSO authorisation, as applicable, or those in effect on the date of application (for repair design approval), plus any amendments to

those certification specifications or special conditions the Agency finds necessary to establish a level of safety equal to that established by the type-certification basis incorporated by reference in the type-certificate, supplemental type-certificate or APU ETSO authorisation;

2. submit all necessary substantiation data, when requested by the Agency;
3. declare compliance with the certification specifications and environmental protection requirements of point (a)(1).

(b) Where the applicant is not the type-certificate or supplemental type-certificate or APU ETSO authorisation holder, as applicable, the applicant may comply with the requirements of point (a) through the use of its own resources or through an arrangement with the type-certificate or supplemental type-certificate or APU ETSO authorisation holder as applicable.

21.A.435 Classification of repairs

(a) A repair may be 'major' or 'minor'. The classification shall be made in accordance with the criteria of point 21.A.91 for a change in the type-certificate.

GM 21.A.435(a) Classification of repairs

(b) A repair shall be classified 'major' or 'minor' under point (a) either:

1. by the Agency; or
2. by an appropriately approved design organisation under a procedure agreed with the Agency.

21.A.437 Issue of a repair design approval

When it has been declared and has been shown that the repair design meets the applicable certification specifications and environmental protection requirements of point 21.A.433(a)(1), it shall be approved:

(a) by the Agency; or

GM 21.A.437(a) Issue of repair design approval

(b) by an appropriately approved organisation that is also the type-certificate, the supplemental type-certificate or APU ETSO authorisation holder, under a procedure agreed with the Agency; or

AMC 21.A.437(b) Issue of repair design approval

(c) for minor repairs only, by an appropriately approved design organisation under a procedure agreed with the Agency.

21.A.439 Production of repair parts

GM 21.A.439 Production of repair parts

Parts and appliances to be used for the repair shall be manufactured in accordance with production data based upon all the necessary design data as provided by the repair design approval holder:

(a) under Subpart F; or
(b) by an organisation appropriately approved in accordance with Subpart G; or
(c) by an appropriately approved maintenance organisation.

21.A.441 Repair embodiment

GM 21.A.441 Repair Embodiment

(a) The embodiment of a repair shall be made in accordance with Part-M or Part-145 as appropriate, or by a production organisation appropriately approved in accordance with Subpart G, under the point 21.A.163(d) privilege.

(b) The design organisation shall transmit to the organisation performing the repair all the necessary installation instructions.

21.A.443 Limitations

GM 21.A.443 Limitations

A repair design may be approved subject to limitations, in which case the repair design approval shall include all necessary instructions and limitations. These instructions and limitations shall be transmitted by the repair design approval holder to the operator in accordance with a procedure agreed with the Agency.

21.A.445 Unrepaired damage

GM 21.A.445 Unrepaired damage

(a) When a damaged product, part or appliance, is left unrepaired, and is not covered by previously approved data, the evaluation of the damage for its airworthiness consequences may only be made:
1. by the Agency; or
2. by an appropriately approved design organisation under a procedure agreed with the Agency.

Any necessary limitations shall be processed in accordance with the procedures of point 21.A.443.

(b) Where the organisation evaluating the damage under point (a) is neither the Agency nor the type-certificate, supplemental type-certificate or APU ETSO authorisation holder, this organisation shall justify that the information on which the evaluation is based is adequate either from its organisation's own resources or through an arrangement with the type-certificate, supplemental type-certificate or APU ETSO authorisation holder, or manufacturer, as applicable.

21.A.447 Record-keeping

AMC 21.A.433 (a) and 21.A.447 Repair design and record keeping

For each repair, all relevant design information, drawings, test reports, instructions and limitations possibly issued in accordance with point 21.A.443, justification for classification and evidence of the design approval, shall:

(a) be held by the repair design approval holder at the disposal of the Agency; and

(b) be retained by the repair design approval holder in order to provide the information necessary to ensure the continued airworthiness of the repaired products, parts or appliances.

21.A.449 Instructions for continued airworthiness

(a) The holder of the repair design approval shall furnish at least one complete set of those changes to the instructions for continued airworthiness which result from the design of the repair, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable requirements, to each operator of aircraft incorporating the repair. The repaired product, part or appliance may be released into service before the changes to those instructions have been completed, but this shall be for a limited service period, and in agreement with the Agency. Those changes to the instructions shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. The availability of some manual or portion of the changes to the instructions for continued airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight-hours/cycles.

(b) If updates to those changes to the instructions for continued airworthiness are issued by the holder of the repair design approval after the repair has been first approved, these updates shall be furnished to each operator and shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. A programme showing how updates to the changes to the instructions for continued airworthiness are distributed shall be submitted to the Agency.

21.A.451 Obligations and EPA marking

(a) Each holder of a major repair design approval shall:
1. undertake the obligations:
   (i) laid down in points 21.A.3A, 21.A.3B, 21.A.4, 21.A.439, 21.A.441, 21.A.443, 21.A.447 and 21.A.449;
   (ii) implicit in the collaboration with the type-certificate, supplemental type-certificate and with the APU ETSO authorisation holder under point 21.A.433 (b), as appropriate.
2. specify the marking, including EPA letters, in accordance with point 21.A.804(a).

(b) Except for type-certificate holders or APU authorisation holders for which point 21.A.44 applies, the holder of a minor repair design approval shall:
1. undertake the obligations laid down in points 21.A.4, 21.A.447 and 21.A.449; and
2. specify the marking, including EPA letters, in accordance with point 21.A.804(a).

(SUBPART N - NOT APPLICABLE)

SUBPART O - EUROPEAN TECHNICAL STANDARD ORDER AUTHORISATIONS

21.A.601 Scope

This Subpart establishes the procedure for issuing ETSO authorisations and the rules governing the rights and obligations of applicants for, or holders of, such authorisations.

21.A.602A Eligibility

Any natural or legal person that produces or is preparing to produce an ETSO article, and that has demonstrated, or is in the process of demonstrating, its capability under point 21.A.602B shall be eligible as an applicant for an ETSO authorisation.

21.A.602B Demonstration of capability

Any applicant for an ETSO authorisation shall demonstrate its capability as follows:

(a) for production, by holding a production organisation approval, issued in accordance with Subpart G, or through compliance with Subpart F procedures; and

(b) for design:

1. for an Auxiliary Power Unit, by holding a design organisation approval, issued by the Agency in accordance with Subpart J;
2. for all other articles, by using procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Annex I (Part 21).

21.A.603 Application

(a) An application for an ETSO authorisation shall be made in a form and manner established by the Agency and shall include an outline of the information required by point 21.A.605.

(b) When a series of minor changes in accordance with point 21.A.611 is anticipated, the applicant shall set forth in its application the basic model number of the article and the associated part numbers with open brackets after it to denote that suffix change letters or numbers (or combinations of them) will be added from time to time.

21.A.604 ETSO Authorisation for an Auxiliary Power Unit (APU)

With regard to ETSO authorisation for an Auxiliary Power Unit:

(a) points 21.A.15, 21.A.16B, 21.A.17A, 21.A.17B, 21.A.20, 21.A.21, 21.A.31, 21.A.33, 21.A.44 shall apply by way of derogation from points 21.A.603, 21.A.606(c), 21.A.610 and 21.A.615, except that an ETSO Authorisation shall be issued in accordance with 21.A.606 instead of the type-certificate.

(b) subpart D or Subpart E is applicable for the approval of design changes by way of derogation from point 21.A.611. When Subpart E is used, a separate ETSO authorisation shall be issued instead of a supplemental type-certificate.

(c) Subpart M is applicable to the approval of repair designs.

21.A.605 Data requirements

The applicant shall submit the following documents, to the Agency:

(a) a statement of compliance certifying that the applicant has met the requirements of this Subpart;

(b) a Declaration of Design and Performance (DDP);

(c) one copy of the technical data required in the applicable ETSO;

(d) the exposition (or a reference to the exposition) referred to in point 21.A.143 for the purpose of obtaining an appropriate production organisation approval under Subpart G or the manual (or a reference to the manual) referred to in point 21.A.125A(b) for the purpose of manufacturing under Subpart F without production organisation approval;

(e) for an APU, the handbook (or a reference to the handbook) referred to in point 21.A.243 for the purpose of obtaining an appropriate design organisation approval under Subpart J;

(f) for all other articles, the procedures referred to in point 21.A.602B(b)(2).

21.A.606 Issue of ETSO authorisation

The applicant shall be entitled to have an ETSO authorisation issued by the Agency after:

(a) demonstrating its capability in accordance with point 21.A.602B; and

(b) demonstrating that the article complies with the technical conditions of the applicable ETSO, and submitting the corresponding statement of compliance;

(c) expressly stating that it is prepared to comply with point 21.A.609.

21.A.607 ETSO authorisation privileges

The holder of an ETSO authorisation is entitled to produce and to mark the article with the appropriate ETSO marking.

21.A.608 Declaration of Design and Performance (DDP)

AMC 21.A.608 Declaration of Design and Performance

(a) The DDP shall contain at least the following information:

1. information corresponding to point 21.A.31(a) and (b), identifying the article and its design and testing standard;
2. the rated performance of the article, where appropriate, either directly or by reference to other supplementary documents;
3. a statement of compliance certifying that the article has met the appropriate ETSO;
4. reference to relevant test reports;
5. reference to the appropriate Maintenance, Overhaul and Repair Manuals;
6. the levels of compliance, where various levels of compliance are allowed by the ETSO;
7. list of deviations accepted in accordance with point 21.A.610.

(b) The DDP shall be endorsed with the date and signature of the holder of the ETSO authorisation, or its authorised representative.

21.A.609 Obligations of holders of ETSO authorisations

The holder of an ETSO authorisation under this Subpart shall:

(a) manufacture each article in accordance with Subpart G or Subpart F that ensures that each completed article conforms to its design data and is safe for installation;

(b) prepare and maintain, for each model of each article for which an ETSO authorisation has been issued, a current file of complete technical data and records in accordance with point 21.A.613;

(c) prepare, maintain and update master copies of all manuals required by the applicable airworthiness specifications for the article;

(d) make available to users of the article and to the Agency on request those maintenance, overhaul and repair manuals necessary for the usage and maintenance of the article, and changes to those manuals;

(e) mark each article in accordance with point 21.A.807;

(f) comply with points 21.A.3A, 21.A.3B and 21.A.4;

(g) continue to meet the qualification requirements of point 21.A.602B.

21.A.610 Approval for deviation

(a) Each manufacturer who requests approval to deviate from any performance standard of an ETSO shall demonstrate that the standards from which a deviation is requested are compensated for by factors or design features providing an equivalent level of safety.

(b) The request for approval to deviate, together with all pertinent data, shall be submitted to the Agency.

21.A.611 Design changes

GM to 21.A.611 Design changes

(a) The holder of the ETSO authorisation may make minor design changes (any change other than a major change) without further authorisation by the Agency. In this case, the changed article keeps the original model

number (part number changes or amendments shall be used to identify minor changes) and the holder shall forward to the Agency any revised data that are necessary for compliance with point 21.A.603(b).

(b) Any design change by the holder of the ETSO authorisation that is extensive enough to require a substantially complete investigation to determine compliance with an ETSO is a major change. Before making such a change, the holder shall assign a new type or model designation to the article and apply for a new authorisation under point 21.A.603.

(c) No design change by any natural or legal person other than the holder of the ETSO authorisation who submitted the statement of compliance for the article is eligible for approval under this Subpart O unless the person seeking the approval applies under point 21.A.603 for a separate ETSO authorisation.

21.A.613 Record-keeping

Further to the record-keeping requirements appropriate to or associated with the quality system, all relevant design information, drawings and test reports, including inspection records for the article tested, shall be held at the disposal of the Agency and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the article and of the type-certificated product in which it is fitted.

21.A.615 Inspection by the Agency

Upon a request of the Agency, each applicant for, or holder of an ETSO authorisation for an article shall allow the Agency to:

(a) witness any tests;

(b) inspect the technical data files on that article.

21.A.619 Duration and continued validity

(a) An ETSO authorisation shall be issued for an unlimited duration. It shall remain valid unless:

1. the conditions required when ETSO authorisation was granted are no longer being observed; or
2. the obligations of the holder specified in point 21.A.609 are no longer being discharged; or
3. the article has proved to give rise to unacceptable hazards in service; or
4. the authorisation has been surrendered or revoked under the applicable administrative procedures established by the Agency.

(b) Upon surrender or revocation, the certificate shall be returned to the Agency.

21.A.621 Transferability

Except for a change in ownership of the holder, which shall be regarded as a change of significance, and shall therefore comply with points 21.A.147 and 21.A.247 as applicable, an ETSO authorisation issued under this Annex I (Part 21) is not transferable.

SUBPART P - PERMIT TO FLY

GM to Subpart P

21.A.701 Scope

GM 21.A.701 Scope

(a) Permits to fly shall be issued in accordance with this Subpart to aircraft that do not meet, or have not been shown to meet, applicable airworthiness requirements but are capable of safe flight under defined conditions and for the following purposes:

GM 21.A.701(a) Permit to fly when certificate of airworthiness or restricted certificate of airworthiness is not appropriate

1. development;
2. showing compliance with regulations or certification specifications;
3. design organisations or production organisations crew training;
4. production flight testing of new production aircraft;
5. flying aircraft under production between production facilities;
6. flying the aircraft for customer acceptance;
7. delivering or exporting the aircraft;
8. flying the aircraft for Authority acceptance;
9. market survey, including customer's crew training;
10. exhibition and air show;
11. flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage;
12. flying an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available;
13. record breaking, air racing or similar competition;
14. flying aircraft meeting the applicable airworthiness requirements before conformity to the environmental requirements has been found;
15. for non-commercial flying activity on individual non-complex aircraft or types for which a certificate of airworthiness or restricted certificate of airworthiness is not appropriate.

(b) This Subpart establishes the procedure for issuing permits to fly and approving associated flight conditions, and establishes the rights and obligations of the applicants for, and holders of, those permits and approvals of flight conditions.

21.A.703 Eligibility

GM 21.A.703 Applicant for a permit to fly

(a) Any natural or legal person shall be eligible as an applicant for a permit to fly except for a permit to fly requested for the purpose of point 21.A.701(a)(15) where the applicant shall be the owner.

(b) Any natural or legal person shall be eligible for application for the approval of the flight conditions.

21.A.705 Competent authority

GM 21.A.705 Competent authority

Notwithstanding point 21.1 of this Annex I (Part 21) for the purpose of this Subpart, the 'competent authority' shall be:

(a) the authority designated by the Member State of registry; or

(b) for unregistered aircraft, the authority designated by the Member State which prescribed the identification marks.

21.A.707 Application for permit to fly

(a) Pursuant to point 21.A.703 and when the applicant has not been granted the privilege to issue a permit to fly, an application for a permit to fly shall be made to the competent authority in a form and manner established by that authority.

(b) Each application for a permit to fly shall include:

GM 21.A.707(b) Application

1. the purpose(s) of the flight(s), in accordance with point 21.A.701;
2. the ways in which the aircraft does not comply with the applicable airworthiness requirements;
3. the flight conditions approved in accordance with point 21.A.710.

(c) Where the flight conditions are not approved at the time of application for a permit to fly, an application for approval of the flight conditions shall be made in accordance with point 21.A.709.

21.A.708 Flight conditions

Flight conditions include:

(a) the configuration(s) for which the permit to fly is requested;

(b) any condition or restriction necessary for safe operation of the aircraft, including:
1. the conditions or restrictions put on itineraries or airspace, or both, required for the flight(s);
2. any conditions or restrictions put on the flight crew to fly the aircraft, in addition to those defined in Appendix XII to this Annex I (Part 21);
3. the restrictions regarding carriage of persons other than flight crew;
4. the operating limitations, specific procedures or technical conditions to be met;
5. the specific flight test programme (if applicable);
6. the specific continuing airworthiness arrangements including maintenance instructions and regime under which they will be performed;

GM 21.A.708(b)(6) Continuing airworthiness

(c) the substantiation that the aircraft is capable of safe flight under the conditions or restrictions of point (b);

GM No. 1 to 21.A.708(c) Safe flight

GM No. 2 to 21.A.708(c) Substantiations

GM No. 3 to 21.A.708(c) Operation of Overweight Aircraft

(d) the method used for the control of the aircraft configuration, in order to remain within the established conditions.

GM 21.A.708(d) Control of aircraft configuration

21.A.709 Application for approval of flight conditions

(a) Pursuant to point 21.A.707(c) and when the applicant has not been granted the privilege to approve the flight conditions, an application for approval of the flight conditions shall be made:
1. when approval of the flight conditions is related to the safety of the design, to the Agency in a form and manner established by the Agency; or
2. when approval of the flight conditions is not related to the safety of the design, to the competent authority in a form and manner established by that authority.

(b) Each application for approval of the flight conditions shall include:

AMC 21.A.709(b) Submission of documentation supporting the establishment of flight conditions

1. the proposed flight conditions;
2. the documentation supporting these conditions; and
3. a declaration that the aircraft is capable of safe flight under the conditions or restrictions of point 21.A.708(b).

21.A.710 Approval of flight conditions

GM 21.A.710 Approval of flight conditions

(a) When approval of the flight conditions is related to the safety of the design, the flight conditions shall be approved by:
1. the Agency; or
2. an appropriately approved design organisation, under the privilege of point 21.A.263(c)(6).

(b) When approval of the flight conditions is not related to the safety of the design, the flight conditions shall be approved by the competent authority, or the appropriately approved organisation that will also issue the permit to fly.

(c) Before approving the flight conditions, the Agency, the competent authority or the approved organisation must be satisfied that the aircraft is capable of safe flight under the specified conditions and restrictions. The Agen-

cy or the competent authority may make or require the applicant to make any necessary inspections or tests for that purpose.

21.A.711 Issue of a permit to fly

(a) A permit to fly (EASA Form 20a, see Appendix III) may be issued by the competent authority under the conditions specified in point 21.B.525.

(b) An appropriately approved design organisation may issue a permit to fly (EASA Form 20b, see Appendix IV) under the privilege granted under point 21.A.263(c)(7), when the flight conditions referred to in point 21.A.708 have been approved in accordance with point 21.A.710.

(c) An appropriately approved production organisation may issue a permit to fly (EASA Form 20b, see Appendix IV) under the privilege granted under point 21.A.163(e), when the flight conditions referred to in point 21.A.708 have been approved in accordance with point 21.A.710.

(d) An appropriately approved continuing airworthiness management organisation may issue a permit to fly (EASA Form 20b, see Appendix IV) under the privilege granted under point M.A.711 of Annex I (Part M) to Commission Regulation (EC) No 2042/2003 (4), when the flight conditions referred to in point 21.A.708 have been approved in accordance with point 21.A.710.

(e) The permit to fly shall specify the purpose(s) and any conditions and restrictions which have been approved in accordance with point 21.A.710.

GM 21.A.711(e) Additional conditions and restrictions

(f) For permits issued under points (b), (c) or (d), a copy of the permit to fly and associated flight conditions shall be submitted to the competent authority at the earliest opportunity but not later than 3 days.

(g) Upon evidence that any of the conditions specified in point 21.A.723(a) are not met for a permit to fly that an organisation has issued pursuant to points (b), (c) or (d), that organisation shall immediately revoke that permit to fly and inform without delay the competent authority.

21.A.713 Changes

GM 21.A.713 Changes

(a) Any change that invalidates the flight conditions or associated substantiation established for the permit to fly shall be approved in accordance with point 21.A.710. When relevant an application shall be made in accordance with point 21.A.709.

(b) A change affecting the content of the permit to fly requires the issuance of a new permit to fly in accordance with point 21.A.711.

21.A.715 Language

The manuals, placards, listings, and instrument markings and other necessary information required by applicable certification specifications shall be presented in one or more of the official language(s) of the European Union acceptable to the competent authority.

21.A.719 Transferability

GM 21.A.713 Changes

(a) A permit to fly is not transferable.

(b) Notwithstanding point (a) for a permit to fly issued for the purpose of point 21.A.701(a)(15), where ownership of an aircraft has changed, the permit to fly shall be transferred together with the aircraft provided the aircraft remains on the same register, or issued only with the agreement of the competent authority of the Member State of registry to which it is transferred.

21.A.721 Inspections

The holder of, or the applicant for, a permit to fly shall provide access to the aircraft concerned at the request of the competent authority.

21.A.723 Duration and continued validity

(a) A permit to fly shall be issued for a maximum of 12 months and shall remain valid subject to:
1. compliance with the conditions and restrictions of point 21.A.711(e) associated with the permit to fly;
2. the permit to fly not being surrendered or revoked;
3. the aircraft remaining on the same register.

(b) Notwithstanding point (a), a permit to fly issued for the purpose of point 21.A.701(a)(15) may be issued for unlimited duration.

(c) Upon surrender or revocation, the permit to fly shall be returned to the competent authority.

21.A.725 Renewal of permit to fly

Renewal of the permit to fly shall be processed as a change in accordance with point 21.A.713.

21.A.727 Obligations of the holder of a permit to fly

The holder of a permit to fly shall ensure that all the conditions and restrictions associated with the permit to fly are satisfied and maintained.

21.A.729 Record-keeping

(a) All documents produced to establish and justify the flight conditions shall be held by the holder of the approval of the flight conditions at the disposal of the Agency and competent authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

(b) All documents associated with the issue of permits to fly under the privilege of approved organisations, including inspection records, documents supporting the approval of flight conditions and the permit to fly itself, shall be held by the related approved organisation at the disposal of the Agency or the competent authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

SUBPART Q - IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

21.A.801 Identification of products

(a) The identification of products shall include the following information:
1. manufacturer's name;
2. product designation;
3. manufacturer's Serial number;
4. any other information the Agency finds appropriate.

(b) Any natural or legal person that manufactures an aircraft or engine under Subpart G or Subpart F shall identify that aircraft or engine by means of a fireproof plate that has the information specified in point (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

(c) Any natural or legal person that manufactures a propeller, propeller blade, or propeller hub under Subpart G or Subpart F shall identify it by means of a plate, stamping, engraving, etching or other approved method of fire-proof identification that is placed on it on a non-critical surface, contains the information specified in point (a), and will not likely be defaced or removed during normal service or lost or destroyed in an accident.

(d) For manned balloons, the identification plate prescribed in point (b) shall be secured to the balloon envelope and shall be located, if practicable, where it is legible to the operator when the balloon is inflated. In addition, the basket, load frame assembly and any heater assembly shall be permanently and legibly marked with the manufacturer's name, part number, or equivalent, and serial number, or equivalent.

21.A.803 Handling of identification data

(a) No person shall remove, change, or place identification information referred to in point 21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in point 21.A.807(a) on an APU, without the approval of the Agency.

(b) No person shall remove or install any identification plate referred to in point 21.A.801, or in point 21.A.807 for an APU, without the approval of the Agency.

(c) By way of derogation from points (a) and (b), any natural or legal person performing maintenance work under the applicable associated implementing rules may, in accordance with methods, techniques and practices established by the Agency:
1. remove, change, or place the identification information referred to in point 21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in point 21.A.807(a) on an APU; or
2. remove an identification plate referred to in point 21.A.801, or point 21.A.807 for an APU, when necessary during maintenance operations.

(d) No person shall install an identification plate removed in accordance with point (c)(2) on any aircraft, engine, propeller, propeller blade, or propeller hub other than the one from which it was removed.

21.A.804 Identification of parts and appliances

(a) Each part or appliance shall be marked permanently and legibly with:
1. a name, trademark, or symbol identifying the manufacturer in a manner identified by the applicable design data; and

GM 21.A.804(a)(1) Identification of parts and appliances

2. the part number, as defined in the applicable design data; and
3. the letters EPA for parts or appliances produced in accordance with approved design data not belonging to the type-certificate holder of the related product, except for ETSO articles.

(b) By way of derogation from point (a), if the Agency agrees that a part or appliance is too small or that it is otherwise impractical to mark a part or appliance with any of the information required by point (a), the authorised release document accompanying the part or appliance or its container shall include the information that could not be marked on the part.

21.A.805 Identification of critical parts

In addition to the requirement of point 21.A.804, each manufacturer of a part to be fitted on a type-certificated product which has been identified as a critical part shall permanently and legibly mark that part with a part number and a serial number.

21.A.807 Identification of ETSO articles

(a) Each holder of an ETSO authorisation under Subpart O shall permanently and legibly mark each article with the following information:
1. the name and address of the manufacturer;
2. the name, type, part number or model designation of the article;
3. the serial number or the date of manufacture of the article or both; and
4. the applicable ETSO number.

(b) By way of derogation from point (a), if the Agency agrees that a part is too small or that it is otherwise impractical to mark a part with any of the information required by point (a), the authorised release document accompanying the part or its container shall include the information that could not be marked on the part.

(c) Each person who manufactures an APU under Subpart G or Subpart F shall identify that APU by means of a fireproof plate that has the information specified in point (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

SECTION B
PROCEDURES FOR COMPETENT AUTHORITIES
SUBPART A - GENERAL PROVISIONS

21.B.5 Scope

(a) This Section establishes the procedure for the competent authority of the Member State when exercising its tasks and responsibilities concerned with the issuance, maintenance, amendment, suspension and revocation of certificates, approvals and authorisations referred to in this Annex I (Part 21).

(b) The Agency shall develop in accordance with Article 19 of Regulation (EC) No 216/2008 certification specifications and guidance material to assist Member States in the implementation of this Section.

21.B.20 Obligations of the competent authority

GM 21.B.20 Responsibility for implementation

Each competent authority of the Member State is responsible for the implementation of Section A, Subparts F, G, H, I and P only for applicants, or holders, whose principal place of business is in its territory.

21.B.25 Requirements for the organisation of the competent authority

(a) General:
The Member State shall designate a competent authority with allocated responsibilities for the implementation of Section A, Subparts F, G, H, I and P with documented procedures, organisation structure and staff.

GM 21.B.25(a) Organisation

(b) Resources:

GM 21.B.25(b) Resources

1. the number of staff shall be sufficient to perform the allocated tasks;
2. the competent authority of the Member State shall appoint a manager, or managers, who are responsible for the execution of the related task(s) within the authority, including the communication with the Agency and the other national authorities as appropriate.

(c) Qualification and training:
All staff shall be appropriately qualified and have sufficient knowledge, experience and training to perform their allocated task.

GM 21.B.25(c) Qualification and training

21.B.30 Documented procedures

AMC 21.B.30(a) Documented procedures

(a) The competent authority of the Member State shall establish documented procedures to describe its organisation, means and methods to fulfil the requirements of this Annex I (Part 21). The procedures shall be kept up to date and serve as the basic working documents within that authority for all related activities.

(b) A copy of the procedures and their amendments shall be available to the Agency.

21.B.35 Changes in organisation and procedures

(a) The competent authority of the Member State shall notify any significant change in its organisation and documented procedures to the Agency.

AMC 21.B.35(a) Changes

(b) The competent authority of the Member State shall update its documented procedures relating to any change to regulations in a timely manner to ensure effective implementation.

21.B.40 Resolution of disputes

GM 21.B.40 Principles for the resolution of disputes

(a) The competent authority of the Member State shall establish a process for the resolution of disputes within its organisation documented procedures.

(b) Where a dispute, which cannot be resolved, exists between the competent authorities of the Member States it is the responsibility of the managers as defined in point 21.B.25(b)(2) to raise the issue with the Agency for mediation.

21.B.45 Reporting/coordination

GM No. 1 to 21.B.45 Co-ordination with other related activities
GM No. 2 to 21.B.45 Co-ordination
GM No. 3 to 21.B.45 Reporting - Information relevant to registers established by the Agency

(a) The competent authority of the Member State shall ensure coordination as applicable with other related certification, investigation, approval or authorisation teams of that authority, other Member States and the Agency to ensure efficient exchange of information relevant for safety of the products, parts and appliances.

(b) The competent authority of the Member State shall notify any difficulty in the implementation of this Annex I (Part 21) to the Agency.

21.B.55 Record-keeping

GM 21.B.55 Record keeping for design approvals transferred to the Agency

The competent authority of the Member State shall keep, or maintain access to, the appropriate records related to the certificates, approvals and authorisations it has granted in accordance with the respective national regulations, and for which responsibility is transferred to the Agency, as long as these records have not been transferred to the Agency.

21.B.60 Airworthiness directives

When the competent authority of a Member State receives an airworthiness directive from the competent authority of a non-member State, that airworthiness directive shall be transferred to the Agency for dissemination in accordance with Article 20 of Regulation (EC) No 216/2008.

SUBPART B - TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

Administrative procedures established by the Agency shall apply.

(SUBPART C - NOT APPLICABLE)

SUBPART D - CHANGES TO TYPE-CERTIFICATES AND RESTRICTED TYPE-CERTIFICATES

21.B.70 Approval of changes to type-certificates

GM No 1 to 21.A.103, 21.A.115 and 21.B.70 Approval of changes to type certificates (TCs)

The approval of the changes to the operational suitability data is included in the approval of the change to the type-certificate. However, the Agency shall use a separate classification and approval process for administering changes to operational suitability data.

SUBPART E - SUPPLEMENTAL TYPE-CERTIFICATES

Administrative procedures established by the Agency shall apply.

SUBPART F - PRODUCTION WITHOUT PRODUCTION ORGANISATION APPROVAL

21.B.120 Investigation

(a) The competent authority shall appoint an investigation team for each applicant for, or holder of, a letter of agreement to conduct all relevant tasks related to this letter of agreement, consisting of a team-leader to manage and lead the investigation team and, if required, one or more team members. The team-leader shall report to the manager responsible for the activity, as defined in point 21.B.25 (b)(2).

AMC 21.B.120(a) Investigation team - Qualification criteria for the investigation team members

(b) The competent authority shall perform sufficient investigation activities for an applicant for, or holder of, a letter of agreement to justify recommendations for the issuance, maintenance, amendment, suspension or revocation of the letter of agreement.

(c) The competent authority shall prepare procedures for the investigation of applicants for, or holders of, a letter of agreement as part of the documented procedures covering at least the following elements:

1. evaluation of applications received;

AMC 21.B.120(c)(1) Evaluation of applications

2. determination of investigation team;
3. investigation preparation and planning;

GM 21.B.120(c)(3) Investigation preparation and planning

4. evaluation of the documentation (manual, procedures, etc.);
5. auditing and inspection;

GM 21.B.120(c)(5) and (6) Auditing and investigation findings

6. follow up of corrective actions; and

GM 21.B.120(c)(5) and (6) Auditing and investigation findings

7. recommendation for issuance, amendment, suspension or revocation of the letter of agreement.

21.B.125 Findings

(a) When during audits or by other means objective evidence is found by the competent authority, showing non-compliance of the holder of a letter of agreement with the applicable requirements of Section A of this Annex, this finding shall be classified in accordance with point 21.A.125B(a).

GM 21.B.125(a) Objective evidence

(b) The competent authority shall take the following actions:

1. for level 1 findings, immediate action shall be taken by the competent authority to limit, suspend or revoke the letter of agreement in whole or in part, depending upon the extent of the finding, until successful corrective action has been completed by the organisation;
2. for level 2 findings, the competent authority shall grant a corrective action period appropriate to the nature of the finding that shall not be more than 3 months. In certain circumstances, at the end of this period and subject to the nature of the finding, the competent authority can extend the 3 months period subject to a satisfactory corrective action plan provided by the organisation.

(c) Action shall be taken by the competent authority to suspend the letter of agreement in whole or in part in case of failure to comply within the timescale granted by the competent authority.

21.B.130 Issue of letter of agreement

AMC 21.B.130 Issue of the letter of agreement

(a) When satisfied that the manufacturer is in compliance with the applicable requirements of Section A, Subpart F, the competent authority shall issue a letter of agreement to the showing of conformity of individual products, parts or appliances (EASA Form 65, see Appendix XI) without undue delay.

(b) The letter of agreement shall contain the scope of the agreement, a termination date and, where applicable, the appropriate limitations relating to the authorisation.

GM 21.B.130(b) Issue of the letter of agreement

(c) The duration of the letter of agreement shall not exceed one year.

21.B.135 Maintenance of the letter of agreement

The competent authority shall maintain the letter of agreement as long as:

(a) the manufacturer is properly using the EASA Form 52 (see Appendix VIII) as a statement of conformity for complete aircraft, and the EASA Form 1 (see Appendix I) for products other than complete aircraft, parts and appliances; and

(b) inspections performed by the competent authority of the Member State before validation of the EASA Form 52 (see Appendix VIII) or the EASA Form 1 (see Appendix I), as per point 21.A.130(c) did not reveal any findings of non-compliance with the requirements or the procedures as contained in the manual provided by the manufacturer, or any non-conformity of the respective products, parts or appliances. These inspections shall check at least that:

1. the agreement covers the product, part or appliance being validated, and remains valid;
2. the manual described in point 21.A.125A(b) and its change status referred in the letter of agreement is used as basic working document by the manufacturer. Otherwise, the inspection shall not continue and therefore the release certificates shall not be validated;
3. production has been carried out under the conditions prescribed in the letter of agreement and satisfactorily performed;
4. inspections and tests (including flight tests, if appropriate), as per points 21.A.130(b)(2) and/or (b)(3), have been carried out under the condition prescribed in the letter of agreement and satisfactorily performed;
5. the inspections by the competent authority described or addressed in the letter of agreement have been performed and found acceptable;
6. the statement of conformity complies with point 21.A.130, and the information provided by it does not prevent its validation; and

(c) any termination date for the letter of agreement has not been reached.

21.B.140 Amendment of a letter of agreement

AMC 21.B.140 Amendment of a letter of agreement

(a) The competent authority shall investigate, as appropriate, in accordance with point 21.B.120 any amendment of the letter of agreement.

(b) When the competent authority is satisfied that the requirements of Section A, Subpart F continue to be complied with, it shall amend the letter of agreement accordingly.

21.B.145 Limitation, suspension and revocation of a letter of agreement

(a) The limitation, suspension or revocation of the letter of agreement shall be communicated in writing to the holder of the letter of agreement. The competent authority shall state the reasons for the limitation, suspension or revocation and inform the holder of the letter of agreement on its right to appeal.

(b) When a letter of agreement has been suspended it shall only be reinstated after compliance with Section A Subpart F has been re-established.

21.B.150 Record-keeping

(a) The competent authority shall establish a system of record-keeping that allows adequate traceability of the process to issue, maintain, amend, suspend or revoke each individual letter of agreement.

(b) The records shall at least contain:

1. the documents provided by the applicant for, or holder of, a letter of agreement;
2. documents established during investigation and inspection, in which the activities and the final results of the elements defined in point 21.B.120 are stated;
3. the letter of agreement, including changes; and
4. minutes of the meetings with the manufacturer.

(c) The records shall be archived for a minimum retention period of six years after termination of the letter of agreement.

(d) The competent authority shall also maintain records of all Statements of Conformity (EASA Form 52, see Appendix VIII) and Authorised Release Certificates (EASA Form 1, see Appendix I) that it has validated.

SUBPART G - PRODUCTION ORGANISATION APPROVAL

21.B.220 Investigation

GM-ELA No 1 to 21.B.220 Investigation

(a) The competent authority shall appoint a production organisation approval team for each applicant, or holder of, a production organisation approval to conduct all relevant tasks related to this production organisation approval, consisting of a team leader to manage and lead the approval team and, if required, one or more team members. The team leader shall report to the manager responsible for the activity as defined in point 21.B.25(b)(2).

GM 21.B.220(a) Investigation team

GM-ELA No 1 to 21.B.220(a) Investigation team

(b) The competent authority shall perform sufficient investigation activities for an applicant for, or holder of, a production organisation approval to justify recommendations for the issuance, maintenance, amendment, suspension or revocation of the approval.

AMC-ELA No 1 to 21.B.220(b) Extent of the investigation

(c) The competent authority shall prepare procedures for the investigation of a production organisation approval as part of the documented procedures covering at least the following elements:

AMC 21.B. 220(c) Procedures for investigation - Evaluation of applications

GM No. 1 to 21.B.220(c) Procedures for investigation - Investigation preparation and planning

GM No. 2 to 21.B.220(c) Procedures for investigation - General

GM No. 3 to 21.B.220(c) Procedures for investigation - POA applications received from organisations with facilities/partners/suppliers/sub-contractors located in a third country

GM No. 4 to 21.B.220(c) Procedures for investigation - Competent authority surveillance of suppliers of a POA holder located in other Member States

AMC-ELA No 1 to 21.B.220(c) Procedures for investigation — Evaluation of applications

AMC-ELA No 2 to 21.B.220(c) Procedures for investigation — General

1. evaluation of applications received;
2. determination of production organisation approval team;
3. investigation preparation and planning;
4. evaluation of the documentation (production organisation exposition, procedures, etc.);
5. auditing;
6. follow up of corrective actions;
7. recommendation for issuance, amendment, suspension or revocation of production organisation approval;
8. continued surveillance.

21.B.225 Findings

(a) When during audits or by other means objective evidence is found by the competent authority, showing non-compliance of the holder of a production organisation approval with the applicable requirements of Section A, this finding shall be classified in accordance with point 21.A.158(a).

GM 21.B.225(a) Objective evidence

AMC 21.B.225(a) Notification of findings

(b) The competent authority shall take the following actions:

1. for level 1 findings, immediate action shall be taken by the competent authority to limit, suspend or revoke the production organisation approval, in whole or in part, depending upon the extent of the finding, until successful corrective action has been completed by the organisation;
2. for level 2 findings, the competent authority shall grant a corrective action period appropriate to the nature of the finding that shall not be more than 3 months. In certain circumstances, at the end of this period and subject to the nature of the finding, the competent authority can extend the 3 months period subject to a satisfactory corrective action plan provided by the organisation.

(c) Action shall be taken by the competent authority to suspend the approval in whole or in part in case of failure to comply within the timescale granted by the competent authority.

21.B.230 Issue of certificate

AMC No. 1 to 21.B.230 Issue of the certificate
GM-ELA No 1 to 21.B.230 Issue of certificate

(a) When satisfied that the production organisation is in compliance with the applicable requirements of Section A, Subpart G, the competent authority shall issue a Production Organisation Approval (EASA Form 55, see Appendix X) without undue delay.

(b) The reference number shall be included on the EASA Form 55 in a manner specified by the Agency.

21.B.235 Continued surveillance

AMC-ELA No 1 to 21.B.235 Continued surveillance
GM-ELA No 1 to 21.B.235 Continued surveillance

(a) In order to justify the maintenance of the production organisation approval the competent authority shall perform continued surveillance:

1. to verify that the production organisation approval holder's quality system complies with Section A Subpart G;
2. to verify that the organisation of the production organisation approval holder operates in accordance with the production organisation exposition;
3. to verify the effectiveness of the production organisation exposition procedures; and
4. to monitor by sample the standards of the product, part or appliance.

GM 21.B.235(a)(4) Guide to the conduct of monitoring production standards.

(b) Continued surveillance shall be performed in accordance with point 21.B.220.

GM 21.B.235(b) Maintenance of the POA - Work allocation within the competent authority
GM 21.B.235(b) and (c) Continued surveillance

(c) The competent authority shall provide through planned continued surveillance that a production organisation approval is completely reviewed for compliance with this Annex I (Part 21) during a period of 24 months. The continued surveillance may be made up of several investigation activities during this period. The number of audits may vary depending upon the complexity of the organisation, the number of sites and the criticality of the production. As a minimum the holder of a production organisation approval shall be subject to continued surveillance activity by the competent authority at least once every year.

AMC 21.B.235(c) Continuation of POA
GM 21.B.235(b) and (c) Continued surveillance

21.B.240 Amendment of a production organisation approval

AMC No. 1 to 21.B.240 Application for significant changes or variation of scope and terms of the POA
AMC-ELA No 1 to 21.B.240 Amendment of a production organisation approval
AMC-ELA No 1 to 21.B.245 Suspension and revocation of a production organisation approval

(a) The competent authority shall monitor any minor change through the continued surveillance activities.

(b) The competent authority shall investigate as appropriate in accordance with point 21.B.220 any significant change of a production organisation approval or application by the holder of a production organisation approval for an amendment of the scope and terms of approval.

(c) When the competent authority is satisfied that the requirements of Section A, Subpart G continue to be complied with it shall amend the production organisation approval accordingly.

21.B.245 Suspension and revocation of a production organisation approval

AMC 21.B.245 Corrective action plan
GM 21.B.245 Continued validity

(a) In case of a level one or level two finding, the competent authority shall partly or fully limit, suspend or revoke a production organisation approval as follows:

1. in case of a level one finding the production organisation approval shall be immediately limited or suspended. If the holder of the production organisation approval fails to comply with point 21.A.158(c)(1), the production organisation approval shall be revoked;
2. in case of a level two finding, the competent authority shall decide on any restriction to the scope of approval by temporary suspension of the production organisation approval or parts thereof. If the holder of a pro-

duction organisation approval fails to comply with point 21.A.158(c)(2), the production organisation approval shall be revoked.

(b) The limitation, suspension or revocation of the production organisation approval shall be communicated in writing to the holder of the production organisation approval. The competent authority shall state the reasons for the suspension or revocation and inform the holder of the production organisation approval of its right to appeal.

(c) When a production organisation approval has been suspended it shall only be reinstated after compliance with Section A, Subpart G has been re-established.

21.B.260 Record-keeping

(a) The competent authority shall establish a system of record-keeping that allows adequate traceability of the process to issue, maintain, amend, suspend or revoke each individual production organisation approval.

(b) The records shall at least contain:

1. the documents provided by the applicant for, or holder of, a production organisation approval certificate;
2. documents established during the investigation, in which the activities and the final results of the elements defined in point 21.B.220 are stated, including findings established in accordance with point 21.B.225;
3. the continued surveillance programme, including records of investigations performed;
4. the production organisation approval certificate, including changes;
5. minutes of the meetings with the holder of the production organisation approval.

(c) The records shall be archived for a minimum retention period of six years.

SUBPART H - CERTIFICATES OF AIRWORTHINESS AND RESTRICTED CERTIFICATES OF AIRWORTHINESS

21.B.320 Investigation

(a) The competent authority of the Member State of registry shall perform sufficient investigation activities for an applicant for, or holder of, an airworthiness certificate to justify the issuance, maintenance, amendment, suspension or revocation of the certificate or permit.

(b) The competent authority of the Member State of registry shall prepare evaluation procedures covering at least the following elements:

1. evaluation of eligibility of the applicant;
2. evaluation of the eligibility of the application;
3. classification of airworthiness certificates;
4. evaluation of the documentation received with the application;
5. inspection of aircraft;
6. determination of necessary conditions, restrictions or limitations to the airworthiness certificates.

GM 21.B.320(b)(6) Investigation

21.B.325 Issue of airworthiness certificate

(a) The competent authority of the Member State of registry shall issue or change a certificate of airworthiness (EASA Form 25, see Appendix VI) without undue delay when it is satisfied that the requirements of point 21.B.326 and the applicable requirements of Section A of Subpart H of this Annex I (Part 21) are met.

GM 21.B.325(a) Airworthiness certificates

(b) The competent authority of the Member State of registry shall issue or change a Restricted certificate of airworthiness (EASA Form 24, see Appendix V) without undue delay when it is satisfied that requirements of point 21.B.327 and the applicable requirements of Section A of Subpart H of this Annex I (Part 21) are met.

GM 21.B.325(b) Completion of the Airworthiness Review Certificate by a Member State

(c) For a new aircraft or used aircraft originating from a non-member State, in addition to the appropriate airworthiness certificate referred to in point (a) or (b), the competent authority of the Member State of registry shall issue an initial airworthiness review certificate (EASA Form 15a, see Appendix II).

21.B.326 Certificate of airworthiness

The competent authority of the Member State of registry shall issue a certificate of airworthiness for:

(a) new aircraft:

1. upon presentation of the documentation required by point 21.A.174(b)(2);
2. when the competent authority of the Member State of registry is satisfied that the aircraft conforms to an approved design and is in a condition for safe operation. This may include inspections by the competent authority of the Member State of registry;

(b) used aircraft:

1. upon presentation of the documentation required by point 21.A.174(b)(3) demonstrating that:
   (i) the aircraft conforms to a type design approved under a type-certificate and any supplemental type-certificate, change or repair approved in accordance with this Annex I (Part 21); and
   (ii) the applicable airworthiness directives have been complied with; and
   (iii) the aircraft has been inspected in accordance with the applicable provisions of Annex I (Part M) of Regulation (EC) No 2042/2003;
2. when the competent authority of the Member State of registry is satisfied that the aircraft conforms to an approved design and is in a condition for safe operation. This may include inspections by the competent authority of the Member State of registry.

21.B.327 Restricted certificate of airworthiness

(a) The competent authority of the Member State of registry shall issue a restricted certificate of airworthiness for:

1. new aircraft:
   (i) upon presentation of the documentation required by point 21.A.174(b)(2);

(ii) when the competent authority of the Member State of registry is satisfied that the aircraft conforms to a design approved by the Agency under a restricted type-certificate or in accordance with specific airworthiness specifications, and is in a condition for safe operation. This may include inspections by the competent authority of the Member State of registry;

2. used aircraft:
   (i) upon presentation of the documentation required by point 21.A.174(b)(3) demonstrating that:
      (A) the aircraft conforms to a design approved by the Agency under a restricted type-certificate or in accordance with specific airworthiness specifications and any supplemental type-certificate change or repair approved in accordance with this Annex I (Part 21); and
      (B) the applicable airworthiness directives have been complied with; and
      (C) the aircraft has been inspected in accordance with the applicable provisions of Annex I (Part M) of Regulation (EC) No 2042/2003;
   (ii) when the competent authority of the Member State of registry is satisfied that the aircraft conforms to the approved design and is in a condition for safe operation. This may include inspections by the competent authority of the Member State of registry.

(b) For an aircraft that cannot comply with the essential requirements referred to in Regulation (EC) No 216/2008 and which is not eligible for a restricted type-certificate, the Agency shall, as necessary to take account of deviations from these essential requirements:
1. issue and check compliance with specific airworthiness specifications ensuring adequate safety with regard to the intended use, and
2. specify limitations for use of this aircraft.

(c) Limitations for use will be associated with restricted certificates of airworthiness, including airspace restrictions, as necessary to take account of deviations from essential requirements for airworthiness laid down in Regulation (EC) No 216/2008.

21.B.330 Suspension and revocation of certificates of airworthiness and restricted certificates of airworthiness

(a) Upon evidence that any of the conditions specified in point 21.A.181(a) is not met, the competent authority of the Member State of registry shall suspend or revoke an airworthiness certificate.

(b) Upon issuance of the notice of suspension and revocation of a certificate of airworthiness or restricted certificate of airworthiness the competent authority of the Member State of registry shall state the reasons for the suspension or revocation and inform the holder of the certificate of its right to appeal.

21.B.345 Record-keeping

(a) The competent authority of the Member State of registry shall establish a system of record-keeping that allows adequate traceability of the process to issue, maintain, amend, suspend or revoke each individual airworthiness certificate.

(b) The records shall at least contain:
1. the documents provided by the applicant;
2. documents established during the investigation, in which the activities and the final results of the elements defined in point 21.B.320(b) are stated; and
3. a copy of the certificate or permit, including amendments.

(c) The records shall be archived for a minimum retention period of six years after leaving that national register.

SUBPART I - NOISE CERTIFICATES

21.B.420 Investigation

(a) The competent authority of the Member State of registry shall perform sufficient investigation activities for an applicant for, or holder of, a noise certificate to justify the issuance, maintenance, amendment, suspension or revocation of the certificate.

(b) The competent authority of the Member State of registry shall prepare evaluation procedures as part of the documented procedures covering at least the following elements:

1. evaluation of eligibility;
2. evaluation of the documentation received with the application;
3. inspection of aircraft.

21.B.425 Issue of noise certificates

GM 21.B.425(a) Noise certificates

The competent authority of the Member State of registry shall, as applicable, issue, or amend noise certificates (EASA Form 45, see Appendix VII) without undue delay when it is satisfied that the applicable requirements of Section A, Subpart I are met.

21.B.430 Suspension and revocation of a noise certificate

(a) Upon evidence that some of the conditions specified in point 21.A.211(a) are not met, the competent authority of the Member State of registry shall suspend or revoke a noise certificate.

(b) Upon issuance of the notice of suspension and revocation of a noise certificate the competent authority of the Member State of registry shall state the reasons for the suspension and revocation and shall inform the holder of the certificate on its right to appeal.

21.B.445 Record-keeping

(a) The competent authority of the Member State of registry shall establish a system of record-keeping with minimum retention criteria that allows adequate traceability of the process to issue, maintain, amend, suspend or revoke each individual noise certificate.

(b) The records shall at least contain:

1. the documents provided by the applicant;
2. documents established during the investigation, in which the activities and the final results of the elements defined in point 21.B.420(b) are stated;
3. a copy of the certificate including amendments.

(c) The records shall be archived for a minimum retention period of six years after leaving that national register.

SUBPART J - DESIGN ORGANISATION APPROVAL

Administrative procedures established by the Agency shall apply.

SUBPART K - PARTS AND APPLIANCES

Administrative procedures established by the Agency shall apply.

(SUBPART L - NOT APPLICABLE)

SUBPART M - REPAIRS

Administrative procedures established by the Agency shall apply.

(SUBPART N - NOT APPLICABLE)

SUBPART O - EUROPEAN TECHNICAL STANDARD ORDER AUTHORISATIONS

Administrative procedures established by the Agency shall apply.

SUBPART P - PERMIT TO FLY

21.B.520 Investigation

(a) The competent authority shall perform sufficient investigation activities to justify the issuance, or revocation of the permit to fly.

(b) The competent authority shall prepare evaluation procedures covering at least the following elements:

AMC 21.B.520(b) Application for a permit to fly

1. evaluation of the eligibility of the applicant;
2. evaluation of the eligibility of the application;
3. evaluation of the documentation received with the application;
4. inspection of the aircraft;
5. approval of the flight conditions in accordance with point 21.A.710(b).

21.B.525 Issue of permits to fly

The competent authority shall issue a permit to fly (EASA Form 20a, see Appendix III)without undue delay:

(a) upon presentation of the data required by point 21.A.707; and

(b) when the flight conditions referred to in point 21.A.708 have been approved in accordance with point 21.A.710; and

(c) when the competent authority, through its own investigations, which may include inspections, or through procedures agreed with the applicant, is satisfied that the aircraft conforms to the design defined under point 21.A.708 before flight.

21.B.530 Revocation of permits to fly

(a) Upon evidence that any of the conditions specified in point 21.A.723(a) are not met for a permit to fly it has issued, the competent authority shall revoke that permit to fly.

(b) Upon issuance of the notice of revocation of a permit to fly the competent authority shall state the reasons for the revocation and inform the holder of the permit to fly on the right to appeal.

21.B.545 Record-keeping

(a) The competent authority shall operate a system of record-keeping that provides adequate traceability of the process for the issue and revocation of each individual permit to fly.

(b) The records shall at least contain:

1. the documents provided by the applicant;
2. documents established during the investigation, in which the activities and the final results of the elements defined in point 21.B.520(b) are stated; and
3. a copy of the permit to fly.

(c) The records shall be kept for a minimum of six years after the permit ceases to be valid.

SUBPART Q - IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

Administrative procedures established by the Agency shall apply.

Appendices

EASA FORMS

When the Forms of this Annex are issued in a language other than English they shall include an English translation.

The EASA ('European Aviation Safety Agency') Forms referred to in the appendices to this Part shall have the following obligatory features. Member States shall ensure that the EASA Forms they issue are recognisable and shall be responsible for having those Forms printed.

Appendix I

Authorised Release Certificate - EASA Form 1 referred to in Annex I (Part 21)

Instructions for the use of EASA Form 1

1. Approving Competent Authority/Country	2. **AUTHORISED RELEASE CERTIFICATE** EASA FORM 1				3. Form Tracking Number
4. Organisation Name and Address:					5. Work Order/Contract/Invoice
6. Item	7. Description	8. Part No	9. Qty.	10. Serial No	11. Status/Work
12. Remarks					
13a. Certifies that the items identified above were manufactured in conformity to: ☐ approved design data and are in a condition for safe operation ☐ non-approved design data specified in block 12		▶(1) 14a. ☐ Part 145.A.50 Release to Service ☐ Other regulation specified in block 12 Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part 145 and in respect to that work the items are considered ready for release to service.◀			
13b. Authorised Signature	13c. Approval/ Authorisation Number	▶(2) 14b. Authorised Signature◀		▶(3) 14c. Certificate/Approval Ref. No◀	
13d. Name	13e. Date (dd mmm yyyy)	▶(4) 14d. Name◀		▶(5) 14e. Date (dd mmm yyyy)◀	

USER/INSTALLER RESPONSIBILITIES

This certificate does not automatically constitute authority to install the item(s).

Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1.

Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

EASA Form 1-21 Issue 2.

These instructions relate only to the use of the EASA Form 1 for production purposes. Attention is drawn to Appendix II to Annex I (Part M) of Regulation (EC) No 2042/2003 which covers the use of the EASA Form 1 for maintenance purposes.

1. PURPOSE AND USE

1.1. A primary purpose of the certificate is to declare the airworthiness of new aviation products, parts and appliances ('the item(s)').

1.2. Correlation must be established between the certificate and the item(s). The originator must retain a certificate in a form that allows verification of the original data.

1.3. The certificate is acceptable to many airworthiness authorities, but may be dependent on bilateral agreements and/or the policy of the airworthiness authority.

1.4. The certificate is not a delivery or shipping note.

1.5. Aircraft are not to be released using the certificate.

1.6. The certificate does not constitute approval to install the item on a particular aircraft, engine, or propeller but helps the end user determine its airworthiness approval status.

1.7. A mixture of production released and maintenance released items is not permitted on the same certificate.

1.8. A mixture of items certified in conformity with 'approved data' and to 'non-approved data' is not permitted on the same certificate.

2. GENERAL FORMAT

2.1. The certificate must comply with the format attached including block numbers and the location of each block. The size of each block may however be varied to suit the individual application, but not to the extent that would make the certificate unrecognisable.

2.2. The certificate must be in 'landscape' format but the overall size may be significantly increased or decreased so long as the certificate remains recognisable and legible. If in doubt consult the competent authority.

2.3. The User/Installer responsibility statement can be placed on either side of the form.

2.4. All printing must be clear and legible to permit easy reading.

2.5. The certificate may either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible and in accordance with the defined format.

2.6. The certificate should be in English, and if appropriate, in one or more other languages.

2.7. The details to be entered on the certificate may be either machine/computer printed or hand-written using block letters and must permit easy reading.

2.8. Limit the use of abbreviations to a minimum, to aid clarity.

2.9. The space remaining on the reverse side of the certificate may be used by the originator for any additional information but must not include any certification statement. Any use of the reverse side of the certificate must be referenced in the appropriate block on the front side of the certificate.

3. COPIES

3.1. There is no restriction in the number of copies of the certificate sent to the customer or retained by the originator.

4. ERROR(S) ON A CERTIFICATE

4.1. If an end-user finds an error(s) on a certificate, he must identify it/them in writing to the originator. The originator may issue a new certificate if they can verify and correct the error(s).

4.2. The new certificate must have a new tracking number, signature and date.

4.3. The request for a new certificate may be honoured without re-verification of the item(s) condition. The new certificate is not a statement of current condition and should refer to the previous certificate in block 12 by the following statement: 'This certificate corrects the error(s) in block(s) [enter block(s) corrected] of the certificate [enter original tracking number] dated [enter original issuance date] and does not cover conformity/condition/release to service'. Both certificates should be retained according to the retention period associated with the first.

5. COMPLETION OF THE CERTIFICATE BY THE ORIGINATOR

Block 1 Approving competent authority/Country

State the name and country of the competent authority under whose jurisdiction this certificate is issued. When the competent authority is the Agency, only 'EASA' must be stated.

Block 2 EASA Form 1 header

'AUTHORISED RELEASE CERTIFICATE EASA FORM 1'

Block 3 Form Tracking Number

Enter the unique number established by the numbering system/procedure of the organisation identified in block 4; this may include alpha/numeric characters.

Block 4 Organisation Name and Address

Enter the full name and address of the production organisation (refer to EASA Form 55 Sheet A) releasing the item(s) covered by this certificate. Logos etc. of the organisation are permitted if they can be contained within the block.

Block 5 Work Order/Contract/Invoice

To facilitate customer traceability of the item(s), enter the work order number, contract number, invoice number, or similar reference number.

Block 6 Item

Enter line item numbers when there is more than one line item. This block permits easy cross-referencing to the Remarks in block 12.

Block 7 Description

Enter the name or description of the item. Preference should be given to the term used in the instructions for continued airworthiness or maintenance data (e.g. Illustrated Parts Catalogue, Aircraft Maintenance Manual, Service Bulletin, Component Maintenance Manual).

Block 8 Part Number

Enter the part number as it appears on the item or tag/packaging. In case of an engine or propeller the type designation may be used.

Block 9 Quantity

State the quantity of items.

Block 10 Serial Number

If the item is required by regulation to be identified with a serial number, enter it here. Additionally, any other serial number not required by regulation may also be entered. If there is no serial number identified on the item, enter 'N/ A'.

Block 11 Status/Work

Enter either 'PROTOTYPE' or 'NEW'.

Enter 'PROTOTYPE' for:

(i) the production of a new item in conformity with non-approved design data;

(ii) re-certification by the organisation identified in block 4 of the previous certificate after alteration or rectification work on an item, prior to entry into service, (e.g. after incorporation of a design change, correction of a defect, inspection or test, or renewal of shelf-life.) Details of the original release and the alteration or rectification work are to be entered in block 12.

Enter 'NEW' for:

(i) the production of a new item in conformity with the approved design data;

(ii) re-certification by the organisation identified in block 4 of the previous certificate after alteration or rectification work on an item, prior to entry into service, (e.g. after incorporation of a design change, correction of a defect, inspection or test, or renewal of shelf-life.) Details of the original release and the alteration or rectification work are to be entered in block 12;

(iii) re-certification by the product manufacturer or the organisation identified in block 4 of the previous certificate of items from 'prototype' (conformity only to non-approved data) to 'new' (conformity to approved data and in a condition for safe operation), subsequent to approval of the applicable design data, provided that the design data has not changed. The following statement must be entered in block 12:

'RE-CERTIFICATION OF ITEMS FROM 'PROTOTYPE' TO 'NEW': THIS DOCUMENT CERTIFIES THE APPROVAL OF THE DESIGN DATA [INSERT TC/STC NUMBER, REVISION LEVEL], DATED [INSERT DATE IF NECESSARY FOR IDENTIFICATION OF REVISION STATUS], TO WHICH THIS ITEM (THESE ITEMS) WAS (WERE) MANUFACTURED.'

The box 'approved design data and are in a condition for safe operation' should be marked in block 13a;

(iv) the examination of a previously released new item prior to entry into service in accordance with a customer-specified standard or specification (details of which and of the original release are to be entered in block 12) or to establish airworthiness (an explanation of the basis of release and details of the original release are to be entered in block 12).

Block 12 Remarks

Describe the work identified in block 11, either directly or by reference to supporting documentation, necessary for the user or installer to determine the airworthiness of item(s) in relation to the work being certified. If necessary, a separate sheet may be used and referenced from the EASA Form 1. Each statement must clearly identify which item(s) in block 6 it relates to. If there is no statement, state 'None'.

Enter the justification for release to non-approved design data in block 12 (e.g. pending type-certificate, for test only, pending approved data).

If printing the data from an electronic EASA Form 1 any data not appropriate in other blocks should be entered in this block.

Block 13a Mark only one of the two boxes:

1. Mark the 'approved design data and are in a condition for safe operation' box if the item(s) was/were manufactured using approved design data and found to be in a condition for safe operation.
2. Mark the 'non-approved design data specified in block 12' box if the item(s) was/were manufactured using applicable non-approved design data. Identify the data in block 12 (e.g. pending type-certificate, for test only, pending approved data).

Mixtures of items released against approved and non-approved design data are not permitted on the same certificate.

Block 13b Authorised Signature

This space shall be completed with the signature of the authorised person. Only persons specifically authorised under the rules and policies of the competent authority are permitted to sign this block. To aid recognition, a unique number identifying the authorised person may be added.

Block 13c Approval/Authorisation Number

Enter the approval/authorisation number/reference. This number or reference is issued by the competent authority.

Block 13d Name

Enter the name of the person signing block 13b in a legible form.

Block 13e Date

Enter the date on which block 13b is signed, the date must be in the format dd = 2 digit day, mmm = first 3 letters of the month, yyyy = 4 digit year.

Block 14a-14e General Requirements for blocks 14a-14e:

Not used for production release. Shade, darken, or otherwise mark to preclude inadvertent or unauthorised use.

User/Installer Responsibilities

Place the following statement on the certificate to notify end users that they are not relieved of their responsibilities concerning installation and use of any item accompanied by the form:

'THIS CERTIFICATE DOES NOT AUTOMATICALLY CONSTITUTE AUTHORITY TO INSTALL.

WHERE THE USER/INSTALLER PERFORMS WORK IN ACCORDANCE WITH REGULATIONS OF AN AIRWORTHINESS AUTHORITY DIFFERENT THAN THE AIRWORTHINESS AUTHORITY SPECIFIED IN BLOCK 1, IT IS ESSENTIAL THAT THE USER/INSTALLER ENSURES THAT HIS/HER AIRWORTHINESS AUTHORITY ACCEPTS ITEMS FROM THE AIRWORTHINESS AUTHORITY SPECIFIED IN BLOCK 1.

STATEMENTS IN BLOCKS 13A AND 14A DO NOT CONSTITUTE INSTALLATION CERTIFICATION. IN ALL CASES AIRCRAFT MAINTENANCE RECORDS MUST CONTAIN AN INSTALLATION CERTIFICATION ISSUED IN ACCORDANCE WITH THE NATIONAL REGULATIONS BY THE USER/ INSTALLER BEFORE THE AIRCRAFT MAY BE FLOWN.'

Appendix II

Airworthiness Review Certificate - EASA Form 15a

[MEMBER STATE]

A Member of the European Union (*)

AIRWORTHINESS REVIEW CERTIFICATE

ARC reference: .....

Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council for the time being into force, the [COMPETENT AUTHORITY OF THE MEMBER STATE] hereby certifies that the following aircraft:

Aircraft manufacturer: .....

Manufacturer's designation: .....

Aircraft registration: .....

Aircraft serial number: .....

is considered airworthy at the time of the review.

Date of issue: ..... Date of expiry: .....

Airframe Flight Hours (FH) at date of issue (**): .....

Signed: ..... Authorisation No: .....

1st Extension: The aircraft has remained in a controlled environment in accordance with point M.A.901 of Annex I to Commission Regulation (EU) No 1321/2014 for the last year. The aircraft is considered to be airworthy at the time of the issue.

Date of issue: ..... Date of expiry: .....

Airframe Flight Hours (FH) at date of issue (**): .....

Signed: ..... Authorisation No: .....

Company Name: ..... Approval reference: .....

2nd Extension: The aircraft has remained in a controlled environment in accordance with point M.A.901 of Annex I to Commission Regulation (EU) No 1321/2014 for the last year. The aircraft is considered to be airworthy at the time of the issue.

Date of issue: ..... Date of expiry: .....

Airframe Flight Hours (FH) at date of issue (**): .....

Signed: ..... Authorisation No: .....

Company Name: ..... Approval reference: .....

EASA Form 15a Issue 4
(*) Delete for non-EU Member States.
(**) Except for balloons and airships.

Appendix III

Competent authority logo	**PERMIT TO FLY**

(*)	
This permit to fly is issued pursuant to Regulation (EC) No 216/2008, Article 5(4)(a) and certifies that the aircraft is capable of safe flight for the purpose and within the conditions listed below and is valid in all Member States This permit is also valid for flight to and within non-Member States provided separate approval is obtained from the competent authorities of such States:	1. Nationality and registration marks:
2. Aircraft manufacturer/type:	3. Serial No:
4. The permit covers: *[purpose in accordance with 21A.701(a)]*	
5. Holder: *[in case of a permit to fly issued for the purpose of 21A.701(a)(15) this should state: 'the registered owner']*	
6. Conditions/remarks:	
7. Validity period:	
8. Place and date of issue:	9. Signature of the competent authority representative:

EASA Form 20a

(*) For use by State of Registry.

Appendix IV

Member State of the Competent Authority having issued the organisation approval under which the permit to fly is issued; or 'EASA' when approval issued by EASA	**PERMIT TO FLY**

Name and Address of the organisation issuing the permit to fly	(*)
This permit to fly is issued pursuant to Regulation (EC) No 216/2008, Article 5(4)(a) and certifies that the aircraft is capable of safe flight for the purpose and within the conditions listed below and is valid in all Member States. This permit is also valid for flight to and within non-Member States provided separate approval is obtained from the competent authorities of such States.	1. Nationality and registration marks:
2. Aircraft manufacturer/type:	3. Serial No:
4. The permit covers: *[purpose in accordance with 21A.701(a)]*	
5. Holder: *[Organisation issuing the permit to fly]*	
6. Conditions/remarks:	
7. Validity period:	
8. Place and date of issue:	9. Authorised signature: Name: Approval Reference No:

EASA Form 20b

(*) For use by Organisation Approval holder.

Appendix V

Restricted Certificate of Airworthiness - EASA Form 24

Competent authority LOGO

RESTRICTED CERTIFICATE OF AIRWORTHINESS

(1)	[Member State of registry] [COMPETENT AUTHORITY OF THE MEMBER STATE]	(2)
1. Nationality and registration marks	2. Manufacturer and manufacturer's designation of aircraft	3. Aircraft serial number
4. Categories		
5. This Certificate of Airworthiness is issued pursuant to (3) [the Convention on International Civil Aviation dated 7 December 1944] and Regulation (EC) No 216/2008, Article 5(4)(b) in respect of the abovementioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent operating limitations. In addition to above the following restrictions apply: (4) (5) [The aircraft may be used in international navigation notwithstanding above restrictions].		
Date of issue:	Signature:	
6. This Restricted Certificate of Airworthiness is valid unless revoked by the competent authority of the Member State of registry. A current Airworthiness Review Certificate shall be attached to this certificate.		

EASA Form 24 Issue 2.

This certificate shall be carried on board during all flights

(1) For use by the State of Registry.
(2) For use by the State of Registry.
(3) Delete as applicable.
(4) For use by the State of Registry.
(5) Delete as applicable.

Appendix VI

Certificate of Airworthiness - EASA Form 25

Competent authority LOGO

CERTIFICATE OF AIRWORTHINESS

(1)	[Member State of registry] [COMPETENT AUTHORITY OF THE MEMBER STATE]	(2)
1. Nationality and registration marks	2. Manufacturer and manufacturer's designation of aircraft	3. Aircraft serial number
4. Categories		
5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December 1944 and Regulation (EC) No 216/2008, Article 5(2)(c) in respect of the abovementioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent operating limitations. Limitations/Remark: (3) Date of issue: Signature:		
6. This Certificate of Airworthiness is valid unless revoked by the competent authority of the Member State of registry. A current Airworthiness Review Certificate shall be attached to this certificate.		

EASA Form 25 Issue 2.

This certificate shall be carried on board during all flights

(1) For use by the State of Registry.
(2) For use by the State of Registry.
(3) For use by the State of Registry.

Appendix VII

For use by State of registry	**1. State of registry**	3. Document No:
2. NOISE CERTIFICATE		
4. Registration marks:	5. Manufacturer and manufacturer's designation of aircraft:	6. Aircraft serial No: .....
7. Engine:	8. Propeller: (*)	
9. Maximum take-off mass (kg)	10. Maximum landing mass (kg) (*)	11. Noise certification standard: .....
12. Additional modifications incorporated for the purpose of compliance with the applicable noise certification standards:		
13. Lateral/full-power noise level: (*)	14. Approach noise level (*)	15. Flyover noise level (*)	16. Overflight noise level (*)	17. Take-off noise level (*) .....
Remarks		
18. This Noise Certificate is issued pursuant to Annex 16, Volume I to the Convention on International Civil Aviation dated 7 December 1944 and Regulation (EC) No 216/2008, Article 6 in respect of the abovementioned aircraft, which is considered to comply with the indicated noise standard when maintained and operated in accordance with the relevant requirements and operating limitations. 19. Date of issue ..... 20. Signature		

EASA Form 45

(*) These boxes may be omitted depending on noise certification standard

Appendix VIII

Aircraft statement of conformity - EASA Form 52

AIRCRAFT STATEMENT OF CONFORMITY		
1. State of manufacture	2. [MEMBER STATE] ([1]) A Member of the European Union ([2])	3. Statement Ref No:
4. Organisation		
5. Aircraft Type	6. Type-certificate Refs:	
7. Aircraft Registration Or Mark	8. Manufacturers Identification No	
9. Engine/Propeller Details ([3])		
10. Modifications and/or Service Bulletins ([4])		
11. Airworthiness Directives		
12. Concessions		
13. Exemptions, Waivers or Derogations ([5])		
14. Remarks		
15. Certificate of Airworthiness		
16. Additional Requirements		
17. Statement of Conformity It is hereby certified that this aircraft confirms fully to the type-certificated design and to the items above in boxes 9, 10, 11, 12 and 13. The aircraft is in a condition for safe operation. The aircraft has been satisfactorily tested in flight.		
18. Signed	19. Name	20. Date (d/m/y)
21. Production Organisation Approval Reference		

EASA Form 52 Issue 2.

([1]) Or EASA if EASA is the competent authority.
([2]) Delete for non-EU Member States or EASA.
([3]) Delete as applicable.
([4]) Delete as applicable.
([5]) Delete as applicable.

Instructions for the use of the Aircraft Statement of Conformity EASA Form 52

1. PURPOSE AND SCOPE

1.1. Use of the aircraft Statement of Conformity issued by a manufacturer producing under Part 21 Section A Subpart F is described under point 21.A.130 and the corresponding acceptable means of compliance.

1.2. The purpose of the aircraft Statement of Conformity (EASA Form 52) issued under Part 21 Section A Subpart G is to enable the holder of an appropriate production organisation approval to exercise the privilege to obtain an individual aircraft certificate of airworthiness from the competent authority of the Member State of registry.

2. GENERAL

2.1. The Statement of Conformity must comply with the format attached including block numbers and the location of each block. The size of each block may however be varied to suit the individual application, but not to the extent that would make the Statement of Conformity unrecognisable. If in doubt consult the competent authority.

2.2. The Statement of Conformity must either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

2.3. Completion may be either machine/computer printed or hand-written using block letters to permit easy reading. English, and where relevant, one or more of the official language(s) of the issuing Member State are acceptable.

2.4. A copy of the Statement and all referenced attachments are to be retained by the approved production organisation.

3. COMPLETION OF THE STATEMENT OF CONFORMITY BY THE ORIGINATOR

3.1. There should be an entry in all blocks to make the document a valid statement.

3.2. A Statement of Conformity may not be issued to the competent authority of the Member State of registry unless the design of the aircraft and its installed products are approved.

3.3. The information required in blocks 9, 10, 11, 12, 13 and 14 may be by reference to separate identified documents held on file by the production organisation, unless the competent authority agrees otherwise.

3.4. This Statement of Conformity is not intended to include those items of equipment that may be required to be fitted in order to satisfy applicable operational rules. However, some of these individual items may be included in block 10 or in the approved type design. Operators are therefore reminded of their responsibility to ensure compliance with the applicable operational rules for their own particular operation.

Block 1

Enter name of the State of manufacture.

Block 2

The competent authority under which authority the Statement of Conformity is issued.

Block 3

A unique serial number should be pre-printed in this block for statement control and traceability purposes. Except that in the case of a computer generated document the number need not be pre-printed where the computer is programmed to produce and print a unique number.

Block 4

The full name and location address of the organisation issuing the statement. This block may be pre-printed. Logos etc. are permitted if the logo can be contained within the block.

Block 5

The aircraft type in full as defined in the type-certificate and its associated data sheet.

Block 6

The type-certificate reference numbers and issue for the subject aircraft.

Block 7

If the aircraft is registered then this mark will be the registration mark. If the aircraft is not registered then this will be such a mark that is accepted by the competent authority of the Member State and, if applicable, by the competent authority of a third country.

Block 8

The identification number assigned by the manufacturer for control and traceability and product support. This is sometimes referred to as a Manufacturers Serial No or Constructors No.

Block 9

The engine and propeller type(s) in full as defined in the relevant type-certificate and its associated data sheet. Their manufacturer identification No and associated location should also be shown.

Block 10

Approved design changes to the aircraft definition.

Block 11

A listing of all applicable airworthiness directives (or equivalent) and a declaration of compliance, together with a description of the method of compliance on the subject individual aircraft including products and installed parts, appliances and equipment. Any future compliance requirement time should be shown.

Block 12

Approved unintentional deviation to the approved type design sometimes referred to as concessions, divergences, or non-conformances.

Block 13

Only agreed exemptions, waivers or derogations may be included here.

Block 14

Remarks. Any statement, information, particular data or limitation which may affect the airworthiness of the aircraft. If there is no such information or data, state; 'NONE'.

Block 15

Enter 'Certificate of Airworthiness', or 'Restricted Certificate of Airworthiness', or for the Certificate of Airworthiness requested.

Block 16

Additional requirements such as those notified by an importing country should be noted in this block.

Block 17

Validity of the Statement of Conformity is dependent on full completion of all blocks on the form. A copy of the flight test report together with any recorded defects and rectification details should be kept on file by the POA holder. The report should be signed as satisfactory by the appropriate certifying staff and a flight crew member, e.g. test pilot or flight test engineer. The flight tests performed are those defined under the control of the quality system, as established by point 21.A.139 in particular 21.A.139(b)(1)(vi), to ensure that the aircraft conforms with the applicable design data and is in condition for safe operation.
The listing of items provided (or made available) to satisfy the safe operation aspects of this statement should be kept on file by the POA holder.

Block 18

The Statement of Conformity may be signed by the person authorised to do so by the production approval holder in accordance with point 21.A.145(d). A rubber stamp signature should not be used.

Block 19

The name of the person signing the certificate should be typed or printed in a legible form.

Block 20

The date the Statement of Conformity is signed should be given.

Block 21

The competent authority approval reference should be quoted.

Appendix IX

CERTIFICATE OF RELEASE TO SERVICE

[APPROVED PRODUCTION ORGANISATION NAME]

Production organisation approval Reference:

Certificate of release to service in accordance with 21A.163(d).

Aircraft: ..... Type: ..... Constructor No/Registration: .....

has been maintained as specified in Work Order: .....

Brief description of work performed:

Certifies that the work specified was carried out in accordance with 21A.163(d) and in respect to that work the aircraft is considered ready for release to service and therefore is in a condition for safe operation.

Certifying Staff (name):

(signature):

Location:

Date: ..-..-.... (day, month, year).

EASA Form 53

CERTIFICATE OF RELEASE TO SERVICE - EASA FORM 53
COMPLETION INSTRUCTIONS

The Block BRIEF DESCRIPTION OF WORK PERFORMED appearing in EASA FORM 53 should include reference to the approved data used to perform the work.

The Block LOCATION appearing in EASA FORM 53 refers to the location where the maintenance has been performed, not to the location of the facilities of the organisation (if different).

Appendix X

Production Organisation Approval Certificates referred to in Subpart G of Annex I (Part 21) - EASA Form 55

[MEMBER STATE] (*)

A Member of the European Union (**)

PRODUCTION ORGANISATION APPROVAL CERTIFICATE

Reference: [MEMBER STATE CODE (*)].21G.XXXX

Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council and to Commission Regulation [(EC) No 1702/2003] for the time being in force and subject to the condition specified below, the [COMPETENT AUTHORITY OF THE MEMBER STATE] hereby certifies:

[COMPANY NAME AND ADDRESS]

as a production organisation in compliance with Annex I (Part 21), Section A, Subpart G of Regulation [(EC) No 1702/2003], approved to produce products, parts and appliances listed in the attached approval schedule and issue related certificates using the above references.

CONDITIONS:

1. This approval is limited to that specified in the enclosed terms of approval, and

2. This approval requires compliance with the procedures specified in the approved production organisation exposition, and

3. This approval is valid whilst the approved production organisation remains in compliance with Annex 1 (Part 21) of Regulation [(EC) No 1702/2003].

4. Subject to compliance with the foregoing conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended or revoked.

Date of original issue: .....

Date of this revision: .....

Revision No: .....

Signed: .....

For the competent authority: [COMPETENT AUTHORITY IDENTIFICATION (*)]

EASA Form 55a issue 2.

(*) or EASA if EASA is the competent authority.
(**) Delete for non-EU Member States.

[MEMBER STATE] (*) A Member of the European Union (**)	**Terms of Approval**	TA: [MEMBER STATE CODE (*)].21G.XXXX
This document is part of Production Organisation Approval Number [MEMBER STATE CODE (*)].21G.XXXX issued to: Company name:		
Section 1. **SCOPE OF WORK:**		
PRODUCTION OF	PRODUCTS/CATEGORIES	
For details and limitations refer to the Production Organisation Exposition, Section xxx		
Section 2. **LOCATIONS:**		
Section 3. **PRIVILEGES:**		
The Production Organisation is entitled to exercise, within its Terms of Approval and in accordance with the procedures of its Production Organisation Exposition, the privileges set forth in 21A.163. Subject to the following:		
[keep only applicable text]		
Prior to approval of the design of the product an EASA Form 1 may be issued only for conformity purposes.		
A Statement of Conformity may not be issued for a non-approved aircraft		
Maintenance may be performed, until compliance with maintenance regulations is required, in accordance with the Production Organisation Exposition Section xxx		
Permits to fly may be issued in accordance with the Production Organisation Exposition Section yyy		
Date of original issue:	Signed:	
Date of this revision:		
Revision No.:	For [COMPETENT AUTHORITY IDENTIFICATION (*)]	

EASA Form 55b Issue 2.

(*) or EASA if EASA is the competent authority.
(**) Delete for non-EU Member States.

Appendix XI

Letter of agreement - EASA Form 65 - referred to in Subpart F of Annex I (Part 21)

[MEMBER STATE] (*)

A Member of the European Union (**)

LETTER OF AGREEMENT FOR PRODUCTION WITHOUT PRODUCTION ORGANISATION APPROVAL

[NAME OF THE APPLICANT]
[TRADE NAME (if different)]
[FULL ADDRESS OF THE APPLICANT]

Date (Day, Month, Year)
Reference: [MEMBER STATE CODE (**)].21F.XXXX

Dear Sirs,

Your production inspection system has been evaluated and found to be in compliance with Section A, Subpart F of Annex I (Part 21) of Regulation [(EC) No 1702/2003].

Therefore, subject to the conditions specified below, we agree that showing of conformity of products, parts and appliances mentioned below may be done under Section A, Subpart F of Annex I (Part 21) of Regulation [(EC) No 1702/2003].

No of Units	P/N	S/N

AIRCRAFT

PARTS

The following conditions are applicable to this agreement:

(1) It is valid whilst [Company Name] remains in compliance with Section A, Subpart F of Annex I (Part 21) of Regulation [(EC) No 1702/2003].

(2) It requires compliance with the procedures specified in [Company Name] Manual Ref./Issue date .....

(3) It terminates on .....

(4) The Statement of Conformity issued by [Company Name] under the provisions of point 21A.130 of the above-mentioned regulation shall be validated by the issuing authority of this letter of agreement in accordance with the procedure ..... of the above referenced manual.

(5) [Company Name] shall notify the issuing authority of this letter of agreement immediately of any changes to the production inspection system that may affect the inspection, conformity, or airworthiness of the products and parts listed in this letter.

For the competent authority: [COMPETENT AUTHORITY IDENTIFICATION (*)2]

Date and Signature

EASA Form 65, Issue 2.

(*) Or EASA if EASA is the competent authority.
(**) Delete for non-EU Member States.

Appendix XII

GM No 1 to Appendix XII to Part-21

GM No. 2 to Appendix XII to Part-21 Competence and experience of pilots for Category 3 and Category 4 flight tests and of Lead Flight Test Engineers (LFTEs)

AMC No. 1 Training courses for Lead Flight Test Engineers (LFTEs)

AMC No. 2 Conditions for appointment of Lead Flight Test Engineers (LFTEs) - Medical fitness

Categories of flight tests and associated flight test crew qualifications

A. General

This Appendix establishes the qualifications necessary for flight crew involved in the conduct of flight tests for aircraft certified or to be certified in accordance with CS-23 for aircraft with a maximum take-off mass (MTOM) of or above 2 000 kg, CS-25, CS-27, CS-29 or equivalent airworthiness codes.

B. Definitions

1. 'Flight test engineer' means any engineer involved in flight test operations either on the ground or in flight.

2. 'Lead flight test engineer' means a flight test engineer assigned for duties in an aircraft for the purpose of conducting flight tests or assisting the pilot in the operation of the aircraft and its systems during flight test activities.

3. 'Flight tests' mean:

3.1. flights for the development phase of a new design (aircraft, propulsion systems, parts and appliances);

3.2. flights to demonstrate compliance to certification basis or conformity to type design;

3.3. flights intended to experiment new design concepts, requiring unconventional manoeuvres or profiles for which it could be possible to exit the already approved envelope of the aircraft;

3.4. flight test training flights.

C. Categories of flight tests

1. General

The descriptions below address the flights performed by design and production organisations under Annex I (Part 21).

2. Scope

If more than one aircraft is involved in a test, each individual aircraft flight shall be assessed under this Appendix to determine if it is a flight test and when appropriate, its category.

The flights referred to in point (6)(B)(3) are the only flights that belong to the scope of this Appendix.

3. Categories of flight tests

Flights tests include the following four categories:

3.1. Category One (1)

(a) Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified;

(b) Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known;

(c) Flights to investigate novel or unusual aircraft design features or techniques;

(d) Flights to determine or expand the flight envelope;

(e) Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached;

(f) Flight test training for Category 1 flight tests.

3.2. Category Two (2)

(a) Flights not classified as Category 1 on an aircraft whose type is not yet certified;

(b) Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification and which:

(i) require an assessment of the general behaviour of the aircraft; or

(ii) require an assessment of basic crew procedures, when a new or modified system is operating or is needed; or

(iii) are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope;

(c) Flight test training for Category 2 flight tests.

3.3. Category Three (3)
Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

3.4. Category Four (4)
Flights not classified as Category 1 or 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change.

E. Competence and experience of other flight test engineers
Other flight test engineers on board the aircraft shall have an amount of experience and training commensurate with the tasks assigned to them as crew members, and in accordance with the flight test operations manual, when applicable.
The organisation shall make all relevant records related to their flight activities available to the relevant flight test engineer.

European Aviation Safety Agency: Ottoplatz 1, D-50679 Cologne, Germany - easa.europa.eu
An agency of the European Union
European Aviation Safety Agency

AMC and GM to Part 21

Acceptable Means of Compliance and Guidance Material
for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations
Issue 2
30 October 2012

SECTION A

Subpart A - General

AMC No 1 to 21.A.3A(a)
Collection, investigation and analysis of data related to Flammability Reduction Means (FRM) reliability

21.A.3A(a)

Holders of a type-certificate, restricted type-certificate, supplemental type-certificate or any other relevant approval deemed to have been issued under Part 21 and which have included a FRM in their design should assess on an on-going basis the effects of aeroplane component failures on FRM reliability. This should be part of the system for collection, investigation and analysis of data required by 21.A.3A(a). The applicant/holder should do the following:

(a) Demonstrate effective means to ensure collection of FRM reliability data. The means should provide data affecting FRM reliability, such as component failures.

(b) Unless alternative reporting procedures are approved by the Agency, provide a report to the Agency every six months for the first five years after service introduction. After that period, continued reporting every six months may be replaced with other reliability tracking methods found acceptable to the Agency or eliminated if it is established that the reliability of the FRM meets, and will continue to meet, the exposure specifications of paragraph M25.1 of Appendix M to CS-25.

(c) Develop service instructions or revise the applicable aeroplane manual, according to a schedule approved by the Agency, to correct any failures of the FRM that occur in service that could increase any fuel tank's Fleet Average Flammability Exposure to more than that specified by paragraph M25.1 of Appendix M to CS-25.

AMC No 2 to 21.A.3A(a)
Collection, investigation and analysis of data related to ETOPS significant occurrences

21.A.3A(a)

(1) Holders of a type-certificate, restricted type-certificate, supplemental type-certificate or any other relevant approval deemed to have been issued under Part 21 and which includes extended range operation with two-engined aeroplane (ETOPS) capability should implement a specific tracking, reporting and resolution system for ETOPS significant occurrences, suitable to ensure the initial and continued fleet compliance with the applicable ETOPS reliability objectives. This system should be part of the system for collection, investigation and analysis of data required by 21.A.3A(a).
Appropriate coordination should exist between engine TC holder, propeller TC holder and APU ETSO authorisation holder with the aircraft TC holder to ensure compliance with the ETOPS reliability objectives.

(2) For tracking, reporting and resolution of ETOPS significant occurrences refer to the latest edition of AMC 20-6 (see AMC-20 document).

GM 21.A.3A(a)
The system for collection, investigation and analysis of data

21.A.3A(a)

In the context of this requirement the word 'Collection' means the setting up of systems and procedures which will enable relevant malfunctions, failures and defects to be properly reported when they occur.

GM 21.A.3A(b)
Occurrence reporting

21.A.3A(b)

For occurrence reporting, refer to the latest edition of AMC 20-8 (see AMC-20 document).

AMC 21.A.3A(b)(2)
Reporting to the Agency

21.A.3A(b)(2)

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

Where 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) expects to be advised immediately and by the fastest possible means (telephone, fax, email, telex, etc.) of whatever details are available at that time. This initial report must be followed up by a full written report within 72 hours. A typical example would be an uncontained engine failure resulting in damage to aircraft primary structure.

Where the occurrence is judged to have resulted in a less immediate and less significant hazard, report submission may be delayed up to the maximum of three days in order to provide more details.

GM 21.A.3B(d)(4)
Defect correction - Sufficiency of proposed corrective action

GM 21.A.3B(d)(4)

This GM provides guidelines to assist in establishing rectification campaigns to remedy discovered defects.

1. STATUS

This document contains GM of a general nature for use in conjunction with engineering judgement, to aid airworthiness engineers in reaching decisions in the state of technology at the material time.

While the main principles of this GM could be applied to small private aeroplanes, helicopters, etc. the numerical values chosen for illustration are appropriate to large aeroplanes for public transport.

2. INTRODUCTION

2.1 Over the years, target airworthiness risk levels underlying airworthiness requirements have developed on the basis of traditional qualitative airworthiness approaches; they have been given more precision in recent years by being compared with achieved airworthiness levels (judged from accident statistics) and by the general deliberations and discussions which accompanied the introduction of rational performance requirements, and more recently, the Safety Assessment approach in requirements.

Although the target airworthiness risk level tends to be discussed as a single figure (a fatal accident rate for airworthiness reasons of not more than 1 in 10 000 000 flights/flying hours for large aeroplanes) it has to be recognised that the requirements when applied to particular aircraft types will result in achieved airworthiness levels at certification lying within a band around the target level and that thereafter, for particular aircraft types and for particular aircraft, the achieved level will vary within that band from time to time.

2.2 The achieved airworthiness risk levels can vary so as to be below the target levels, because it is difficult if not impossible to design to the minimum requirements without being in excess of requirements in many areas; also because aircraft are not always operated at the critical conditions (e.g., aircraft weight, CG position and operational speeds; environmental conditions - temperature, humidity, degree of turbulence). The achieved level may vary so as to be above the target level because of undetected variations in material standards or build standards, because of design deficiencies, because of encountering unforeseen combinations of failures and/or combinations of events, and because of unanticipated operating conditions or environmental conditions.

2.3 There is now a recognition of the need to attempt to monitor the conditions which tend to increase the level and to take appropriate corrective action when the monitoring indicates the need to do so in order to prevent the level rising above a predetermined 'ceiling'.

2.4 The Agency also has a duty in terms of providing the public with aviation services and therefore should consider the penalties associated with curtailment or even removal (by 'grounding') of aviation services when establishing the acceptability of any potential variation in airworthiness level.

2.5 Thus, the purpose of this GM is:

(a) To postulate basic principles which should be used to guide the course of actions to be followed so as to maintain an adequate level of airworthiness risk after a defect has occurred which, if uncorrected, would involve a potential significant increase of the level of risk for an aircraft type.

(b) For those cases where it is not possible fully and immediately to restore an adequate level of airworthiness risk by any possible alleviating action such as an inspection or limitation, to state the criteria which should be used in order to assess the residual increase in risk and to limit it to an appropriate small fraction of the mean airworthiness through life risk.

3. DISCUSSION

3.1 Several parameters are involved in decisions on safety matters. In the past the cost of proposed action has often been compared with the notional 'risk cost', i.e. the cost of a catastrophe multiplied by its probability of occurrence.

3.2 This can be a useful exercise, but it should be held within the constraint of acceptable airworthiness risk levels, i.e., within airworthiness risk targets which represent the maximum levels of risk with which an aircraft design must comply, i.e., in the upper part of the 'band'. Currently for large aeroplanes the mean airworthiness risk level is set at a catastrophe rate for airworthiness reasons of not more than one in every ten- million flights/flying hours. The constraint is overriding in that any option, which could be permitted on risk cost considerations, or other grounds, is unacceptable if it leads to significant long-term violation of this safety requirement.

3.3 While it should clearly be the objective of all to react to and eliminate emergency situations, i.e., those involving a potentially significant increase of airworthiness risk levels, without unreasonable delay, the Agency should be able finally to rule on what is a minimum acceptable campaign programme. It has therefore seemed desirable to devise guidelines to be used in judging whether a proposed campaign of corrective actions is sufficient in airworthiness terms, and clearly this ought to be based on determining the summation of the achieved airworthiness risk levels for the aircraft and passengers during any periods of corrective action and comparing them with some agreed target.

3.4 As the period of corrective action will not be instantaneous (unless by grounding), there is potentially an increase in the achieved airworthiness risk level possibly to and, without controls, even above the higher part of the 'band', and the amount by which the level is above the mean target figure, and the period for which it should be allowed to continue, has been a matter of some arbitrary judgement.

3.5 It would appear desirable to try to rationalise this judgement. For example, if an aircraft were to spend 10 % of its life at a level such that the risk of catastrophe was increased by an order of magnitude, the average rate over its whole life would be doubled which may not be in the public interest. A more suitable criterion is perhaps one which would allow an average increase in risk of, say one third on top of the basic design risk when spread over the whole life of the aircraft an amount which would probably be acceptable within the concept (See Figure 1). It would then be possible to regard the 'through life' risk to an aircraft - e.g., a mean airworthiness target of not more than one airworthiness catastrophe per 10 million (107) hours, as made up of two parts, the first being 3/4 of the total and catering for the basic design risk and the other being 1/4 of the total, forming an allowance to be used during the individual aircraft's whole life for unforeseen campaign situations such as described above.

3.6 Investigation has shown that a total of ten such occasions might arise during the life of an individual aircraft.

3.7 Using these criteria, there could then be during each of these emergency periods (assumed to be ten in number) a risk allowance contributed by the campaign alone of:

1×10^{-7} for 2.5% of the aircraft's life; or

5×10^{-7} for 0.5% of the aircraft's life; or

1×10^{-6} for 0.25% of the aircraft's life; or

1×10^{-5} for 0.025% of the aircraft's life, etc.

without exceeding the agreed 'allowance' set aside for this purpose.

3.8 Thus a 'reaction table' can be created as indicated in Table 1 (the last two columns assuming a typical aircraft design life of 60,000 hours and an annual utilisation of 3 000 hours per annum) showing the flying or calendar time within which a defect should be corrected if the suggested targets are to be met.

Table 1

Estimated catastrophe rate to aircraft due to the defect under consideration (per a/c hour)	Average reaction time for aircraft at risk (hours)	On a calendar basis
4 x 10-8	3750	15 months
5 x 10-8	3000	12 months
1 x 10-7	1500	6 months
2 x 10-7	750	3 months
5 x 10-7	300	6 weeks
1 x 10-6	150	3 weeks
1 x 10-5	15	Return to base

3.9 These principles may be applied to a single aircraft or a number of aircraft of a fleet but in calculating risk, all the risk should be attributed to those aircraft which may carry it, and should not be diluted by including other aircraft in the fleet which are known to be free of risk. (It is permissible to spread the risk over the whole fleet when a source is known to exist without knowing where). Where a fleet of aircraft is involved Column 2 may be interpreted as the mean time to rectification and not the time to the last one.

3.10 There is one further constraint. However little effect a situation may have on the 'whole life' risk of an aircraft, the risk should not be allowed to reach too high a level for any given flight. Thus while a very high risk could be tolerated for a very short period without unacceptable degradation of the overall airworthiness target, the few flights involved would be exposed to a quite unacceptable level of risk. It is therefore proposed that the Table 1 should have a cut-off at the 2 x 10-6 level so that no flight carries a risk greater than 20 times the target. At this level the defect is beginning to contribute to a greater likelihood of catastrophe than that from all other causes, including non-airworthiness causes, put together. If the situation is worse than this, grounding appears to be the only alternative with possibly specially authorised high-risk ferry flights to allow the aircraft to return to base empty. Figures 2 and 3 show a visualisation chart equivalent to Table 1, giving average rectification time (either in flight hours or months) based on probability of defect that must be corrected.

3.11 It will be seen that the above suggestions imply a probability of catastrophe from the campaign alone of 1.5/10 000 per aircraft during each separate campaign period (i.e., p = 0.015 per 100 aircraft fleet).

3.12 In addition, in order to take into account large fleet size effect, the expected probability of the catastrophic event during the rectification period on the affected fleet shall not exceed 0.1. See Figure 4.

3.13 It should also be noted that in assessing campaign risks against 'design risk', an element of conservatism is introduced, since the passenger knows only 'total risk' (i.e. airworthiness plus operations risks) and the fatal accident rate for all reasons is an order of magnitude greater than that for airworthiness reasons only (i.e., 10^{-6} as against 10^{-7}). The summated campaign risk allowance proposed by this GM is therefore quite a small proportion of the total risk to which a passenger is subject. When operating for short periods at the limit of risk proposed (2 x 10^{-6} per hour) the defect is however contributing 100 % more risk than all other causes added together.

3.14 A similar approach is proposed to cover the case of defects associated to hazardous failure conditions for which the safety objectives defined by the applicable certification specifications are not met. According to CS 25.1309, the allowable probability for each hazardous failure condition is set at 10^{-7} per flight hour compared to 10^{-9} per flight hour for a catastrophic failure condition. Figure 5 is showing a visualisation chart giving average rectification time based on probability of defect that should be corrected. This is similar to Figure 2 but with lower and upper boundaries adapted to cover the case of hazardous failure conditions (probabilities of 10^{-7} and $2x10^{-4}$ respectively).

3.15 In addition, in order to take into account large fleet size effect, the expected probability of the hazardous event during the rectification period on the affected fleet shall not exceed 0.5. See Figure 6.

4. GUIDELINES

4.1 The above would lead to the following guidelines for a rectification campaign to remedy a discovered defect associated to a catastrophic failure condition without grounding the aircraft:

(i) Establish all possible alleviating action such as inspections, crew drills, route restrictions, and other limitations.

(ii) Identify that part of the fleet, which is exposed to the residual risk, after compliance has been established with paragraph (i).

(iii) Using reasonably cautious assumptions, calculate the likely catastrophic rate for each aircraft carrying the risk in the affected fleet.

(iv) Compare the speed with which any suggested campaign will correct the deficiency with the time suggested in Figure 2. The figure should not be used beyond the 2x10- 6 level, except for specially authorised flights.

(v) Also ensure that the expected probability of the catastrophic event during the rectification period on the affected fleet is in accordance with Figure 4.

4.2 Similarly, the following guidelines would be applicable for a rectification campaign to remedy a discovered defect associated to a hazardous failure condition without grounding the aircraft:

(i) Establish all possible alleviating action such as inspections, crew drills, route restrictions, and other limitations.

(ii) Identify that part of the fleet, which is exposed to the residual risk, after compliance has been established with paragraph (i).

(iii) Using reasonably cautious assumptions, calculate the likely hazardous rate for each aircraft carrying the risk in the affected fleet.

(iv) Compare the speed with which any suggested campaign will correct the deficiency with the time suggested in Figure 5.

(v) Also ensure that the expected probability of the hazardous event during the rectification period on the affected fleet is in accordance with Figure 6.

4.3 It must be stressed that the benefit of these guidelines will be to form a datum for what is considered to be the theoretically maximum reaction time. A considerable amount of judgement will still be necessary in establishing many of the input factors and the final decision may still need to be tempered by non-numerical considerations, but the method proposed will at least provide a rational 'departure point' for any exercise of such judgement.

4.4 It is not intended that the method should be used to avoid quicker reaction times where these can be accommodated without high expense or disruption of services.

Figure 1 - Visualisation Chart for CS-25

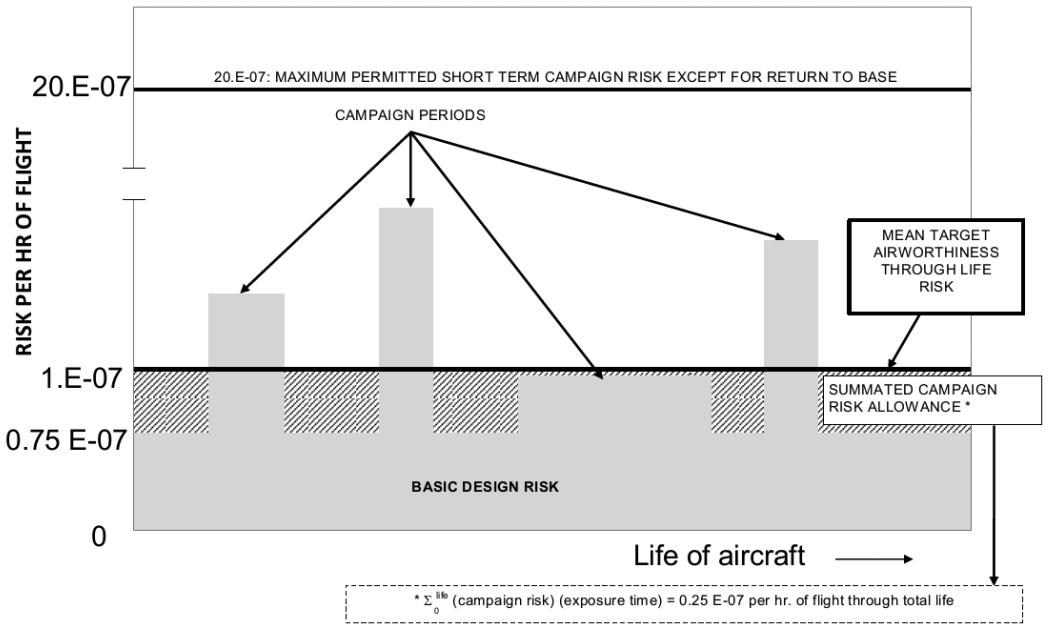


Figure 2 - Visualisation Chart for CS-25 (Flight hours)

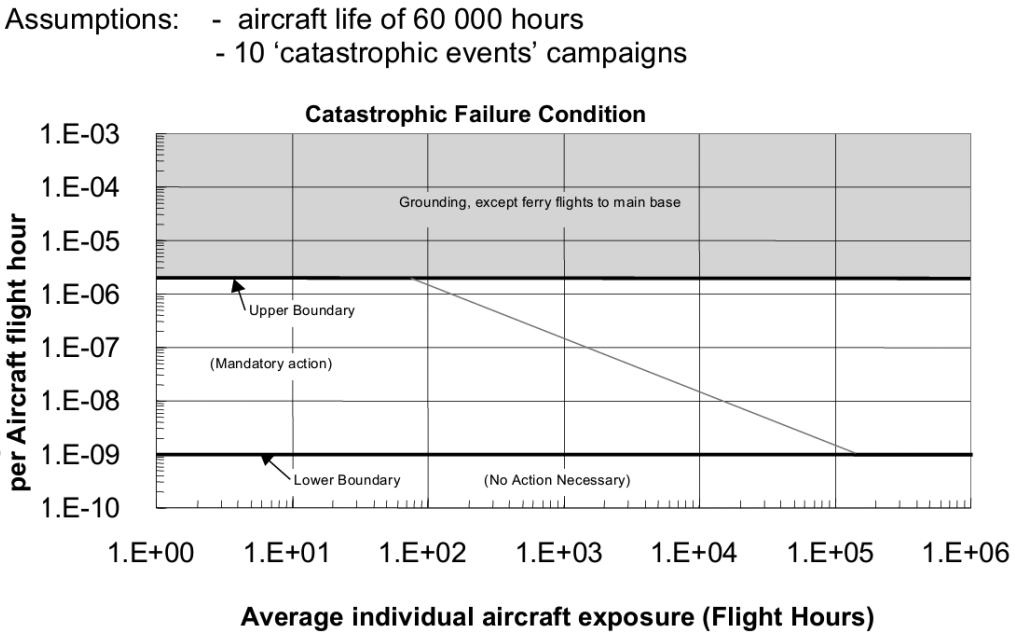


Figure 3 - Visualisation Chart for CS-25 (Calendar basis)

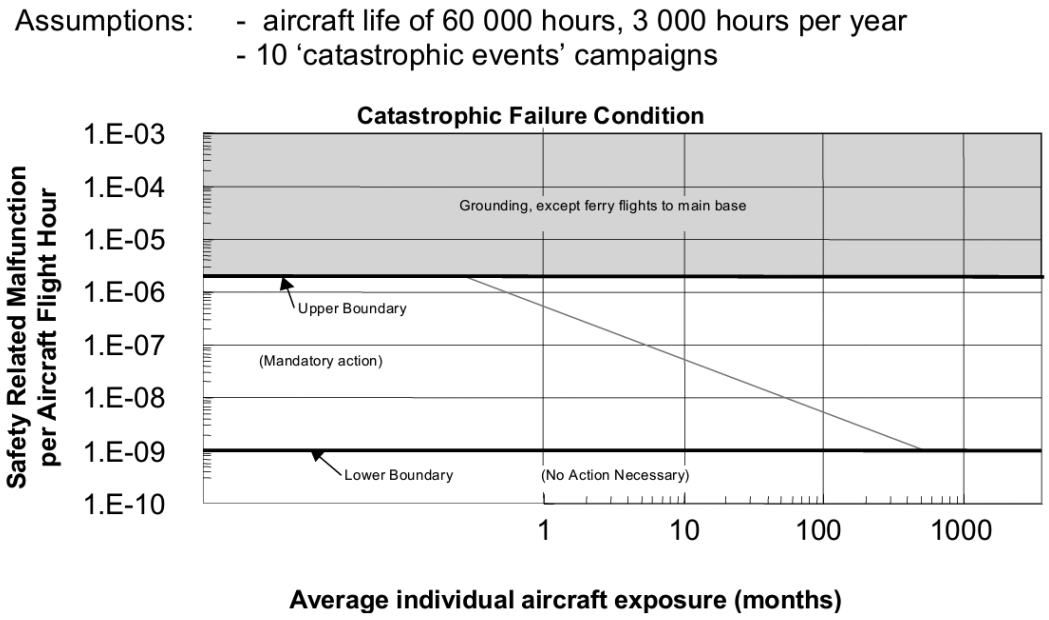
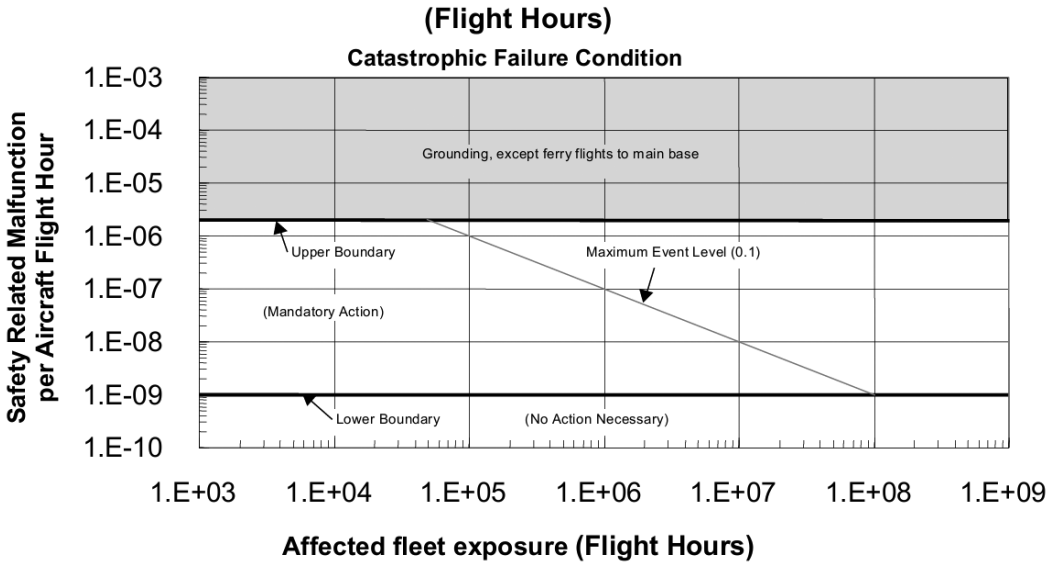


Figure 4 - Visualisation Chart for CS-25



(Figure 5 - Vi sualisation Chart for CS-25 (Flight hours)

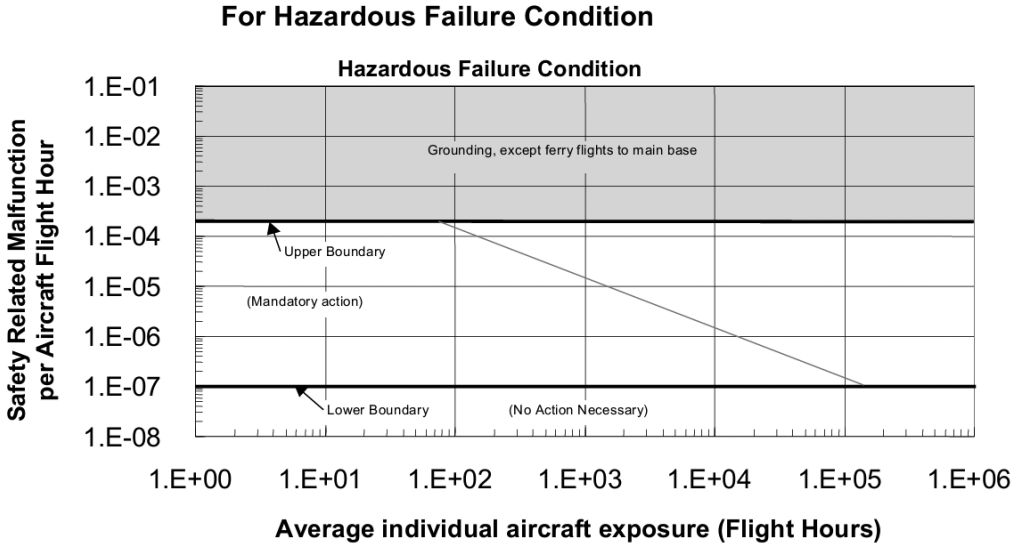
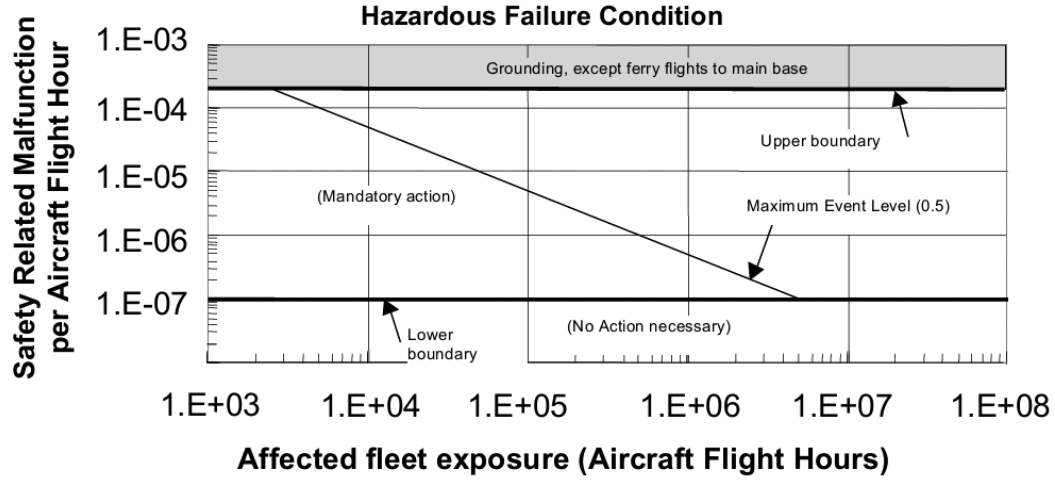


Figure 6 - Visualisation Chart for CS-25 (Flight hours)



AMC 21.A.3B(b) Unsafe condition

21.A.3B(b)

An unsafe condition exists if there is factual evidence (from 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 are not performing their intended function.

Note 1: Non-compliance with applicable certification 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 paragraphs (a), (b) and (c).

Note 2: An unsafe condition may exist even though applicable airworthiness requirements are complied with.

Note 3: The above definition covers the majority of cases where the Agency considers there is an unsafe condition. There may be other cases where overriding safety considerations may lead the Agency 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 consequences listed in paragraph (a) in specific operating environments. Although having less severe immediate consequences than those listed in paragraph (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.

GM 21.A.3B(b) Determination of an unsafe condition

21.A.3B(b)

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.

1. INTRODUCTION

Certification or approval of a product, part or appliance is a demonstration of compliance with 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 performances 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 analysis,
- the crew is expected to have the skill to apply the procedures correctly, and
- the aircraft is assumed to be maintained in accordance with the prescribed instructions for continued airworthiness (or maintenance programme), etc.

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.

See AMC 21.A.3B(b) for definition of 'unsafe condition' used in 21.A.3A(b).

2. GUIDELINES FOR ESTABLISHING IF A CONDITION IS UNSAFE

The following paragraphs give general guidelines for analysing the reported events and determining if an unsafe condition exists, and are provided for each type of product, part or appliance subject to a specific airworthiness approval: type-certificates (TC) or supplemental type-certificates (STC) for aircraft, engines or propellers, or European Technical Standard Orders (ETSO).

This analysis may be qualitative or quantitative, i.e. formal and quantitative safety analyses may not be available for older or small aircraft. In such cases, the level of analysis should be consistent with that required by the certification specifications and may be based on engineering judgement supported by service experience data.

2.1 Analysis method for aircraft

2.1.1 Accidents or incidents without any aircraft, engines, system, propeller or part or appliance malfunction or failure

When an accident/incident does not involve any component malfunction or failure but when a crew human factor has been a contributing factor, this should be assessed from a man-machine interface standpoint to determine whether the design is adequate or not. Paragraph 2.5 gives further details on this aspect.

2.1.2 Events involving an aircraft, engines, system, propeller or part or appliance 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 service experience.

These events may have occurred in service, or have been identified during maintenance, or been identified as a result of subsequent tests, analyses, or quality control.

These may result from a design deficiency or a production deficiency (non-conformity with the type design), or from improper maintenance. In this case, it should be determined if 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 paragraph 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 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, are subsequently shown by 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 that has not been qualified as damage tolerant. 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. Typical examples of such elements are listed for large aeroplanes in AMC 25.571(a) 'Damage tolerance and fatigue evaluation of structure', and in the equivalent material for rotorcraft.
- Could exist in a Principal Structural Element that has been qualified as damage tolerant, but for which the established inspections, or other procedures, have been shown to be, or may be, inadequate to prevent catastrophic failure.
- Could reduce the structural stiffness to such an extent that the required flutter, divergence or control reversal margins are no longer achieved.
- 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.
- Could, under ultimate load conditions, result in the liberation of items of mass that may injure occupants of the aircraft.
- Could jeopardise 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 systems components malfunctions, failures or defects should be analysed.

For this analysis, the certification data may be used as supporting material, in particular systems safety analyses.

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) 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 (failure rate increase 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 safety objectives for the following systems are still met, a deficiency affecting these types of systems may often lead to a mandatory corrective action:

- back up emergency systems, or
- fire detection and protection systems (including shut off means).

Deficiencies affecting systems used during an emergency evacuation (emergency exits, evacuation assist means, emergency lighting system ...) and to locate the site of a crash (Emergency Locator Transmitter) 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 High Intensity Radiated Fields 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.

If there is a deficiency in systems used to assist in the enquiry following an accident or serious incident (e.g., Cockpit Voice Recorder, Flight Data Recorder), preventing them to perform their intended function, the Agency may take mandatory action.

2.2 Engines

The consequences and probabilities of engine failures have to be assessed at the aircraft level in accordance with paragraph 2.1, and also at the engine level for those failures considered as Hazardous in CS E-510. 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 have to be assessed at the aircraft level in accordance with paragraph 2.1, and also at the propeller level for those failures considered as hazardous in CS P-70. 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 and appliances

The consequences and probabilities of equipment failures have to be assessed at the aircraft level in accordance with paragraph 2.1.

2.5 Human factors aspects in establishing and correcting unsafe conditions

This paragraph provides guidance on the way to treat an unsafe condition resulting 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, 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 between 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.

AMC 21.A.4 Transferring of information on eligibility and approval status from the design holder to production organisations

21.A.4

Where there is a need to provide (normally outside the design organisation) a visible statement of approved design data or airworthiness, operational suitability or environmental protection data associated with the approved design data, the following minimum information must be provided. The need for a visible statement may be in relation to Company holding a production organisation approval (POA) in relation to 21.A.163(c).

The procedures related to the use of forms or other electronic means to provide this information must be agreed with the Agency.

Information to be provided:

Company Name: the name of the responsible design organisation (TC, STC, approval of repair or minor change design, ETSO authorisation holder) issuing the information.

Date: the date at which the information is released.

Eligibility: indicate the specific products or articles, in case of ETSO authorisation, for which data have been approved.

Identification: the part number of the part or appliance. Preference should be given to the use of the Illustrated Parts Catalogue (IPC) designation. Alternatively the reference to the instruction for continued airworthiness (e.g., SB, AMM, etc.) could be stated. Marking requirements of Part 21 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 or appliance preference should be given to use of IPC designation. The description is to include reference to any applicable ETSO authorisation or EPA marking, or previous national approvals still valid.

Purpose of data: the reason for the provision of the information should be stated by the design approval holder.

Examples:

a) Provision of approved design data to a production organisation to permit manufacture (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 (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 should be given (make reference to the approved STC, change or repair).

Limitations/Remarks: state any information, either directly or by reference to supporting documentation that 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: provide reference information related to the approval of the data (Agency document or DOA privilege).

Authorised signature: name and hand-written normal or electronic signature of a person who has written authority from the design organisation, as indicated in the procedures agreed with the Agency.

<ED Decision 2014/007/R word 'operational suitability' added to 1st parag>

Subpart B - Type-certificates and restricted type-certificates

GM 21.A.14(b) Eligibility for alternative procedures

21.A.14(b)

Design organisations approved under Part 21 Section A Subpart J ('Subpart J DOA') should be the normal approach for type certification, supplemental type certification, approval of major changes to type design or approval of major repair design, except when agreed otherwise by the Agency in accordance with 21.A.14, 21.A.112B and 21.A.432B.

The acceptance of alternative procedures, as defined in AMC 21.A.14(b), should be limited where the Agency finds it more appropriate for the conduct of type certification, supplemental type certification, approval of changes to type design, approval of repair design.

AMC 21.A.14(b) Alternative Procedures

21.A.14(b)

Alternative procedures are an acceptable means to demonstrate design capability in the cases described in 21.A.14, 21.A.112B or 21.A.432B. This concept is the implementation, in the context of specific projects, of procedures required in Subpart J DOA, to ensure that the applicant will perform relevant activities as expected by the Agency, but without the requirements on the organisation itself that can be found in Subpart J. The establishment of these alternative procedures may be seen as a starting phase for a Subpart J DOA, allowing at a later stage, at the discretion of the applicant, to move towards a full Subpart J DOA by the addition of the missing elements.

1. Scope
   - 1.1 As alternative to DOA, a manual of procedures must set out specific design practices, resources and sequence of activities relevant for the specific projects, taking account of Part 21 requirements.
   - 1.2 These procedures must be concise and limited to the information needed for quality and proper control of activities by the applicant/holder, and by the Agency.
2. Management of the (supplemental) type-certification process
   - 2.1 Certification programme: See AMC 21.A.20(b) for type-certification and AMC 21.A.114 for supplemental type-certification.
   - 2.2 Compliance documentation: see AMC 21.A.20(c)
3. Management of design changes
   - 3.1 Approval of changes to type design, repairs and production deviations from the approved design data

     The TC or STC applicant must provide procedures acceptable to the Agency for classification and approval of changes to type design (see paragraphs 3.2 and 3.3), and repairs and production deviations from the approved design data (see paragraph 3.4).
   - 3.2 Classification
     - 3.2.1 Content

       The procedure must address the following points:
       - identification of changes to type design
       - airworthiness classification
       - changes to type design initiated by sub-contractors
       - documents to justify the classification
       - authorised signatories

       Criteria used for classification must be in compliance with 21.A.91 and corresponding interpretations.
     - 3.2.2 Identification of changes to type design

       The procedure must indicate how the following are identified:
       - major changes to type design
       - those minor changes to type design where additional work is necessary to demonstrate compliance with the certification specifications
       - other minor changes to type design requiring no further demonstrating of compliance.
     - 3.2.3 Airworthiness classification

       The procedure must show how the effects on airworthiness are analysed, from the very beginning, by reference to the applicable certification specifications.

If no specific certification specifications are applicable to the change, the above review must be carried out at the level of the part or system where the change is integrated and where specific certification specifications are applicable.

3.2.4 Control of changes to type design initiated by sub-contractors

The procedure must indicate, directly or by cross-reference to written procedures, how changes to type design initiated by sub-contractors are controlled.

3.2.5 Documents to justify the classification

All decisions of classification of changes to type design must be documented and approved by the Agency. It may be in the format of meeting notes or register.

3.2.6 Authorised signatories

The procedure should identify the persons authorised to sign the proposed classification before release to the Agency for approval.

3.3 Approval of changes to type design

3.3.1 Content

The procedure must address the following points:

- compliance documentation
- approval process
- authorised signatories

3.3.2 Compliance documentation

For major changes and those minor changes to type design where additional work to demonstrate compliance with the applicable certification specifications is necessary, compliance documentation must be established in accordance with AMC 21.A.20(c).

3.3.3 Approval process

A For the approval of major changes to type design, a certification programme as defined in AMC 21.A.97 must be established.

B For major changes and those minor changes to type design where additional work to show compliance with the applicable certification specifications is necessary, the procedure should define a document to support the approval process.

This document must include at least :

- identification and brief description of the change and its classification
- applicable certification specifications
- reference to the compliance documents
- effects, if any, on limitations and on the approved documentation
- authorised signatory

C For the other minor changes, the procedure must define a means:

- to identify the change
- to present the change to the Agency for approval.

3.3.4 Authorised signatories

The procedure must identify the persons authorised to sign the change before release to the Agency for approval.

3.4 Repairs and production deviations from the approved design data

A procedure following the principles of paragraphs 3.2 and 3.3 must be established for the classification and approval of repairs and unintentional deviations from the approved design data occurring in production (concessions or non-conformance's). For repairs, the procedure must be established in accordance with Part 21 Section A Subpart M and associated acceptable means of compliance (AMC) or guidance material (GM).

4. Issue of information and instructions to owners, operators or others required to use the data

4.1 General

Information and instructions include the operational suitability data.

4.2 Data related to changes

The information or instructions issued by a TC, STC, approval of changes to type design, approval of repair design holder are intended to provide the owners of a product with all necessary data to implement a change on the product, or a repair, or to inspect it.

The information or instructions may be issued in a format of a Service Bulletin as defined in ATA 100 system, or in Structural Repair Manuals, Maintenance Manuals, Engine and Propeller Manuals, etc.

The preparation of this data involves design, production and inspection. The three aspects should be properly addressed and a procedure should exist.

4.3 Procedure

The procedure should address the following points:

- preparation
- verification of technical consistency with corresponding approved change(s), repair(s) or approved data, including effectivity, description, effects on airworthiness or operational suitability, especially when limitations are changed
- verification of the feasibility in practical applications.

The persons authorised to sign before release of information and instructions to the Agency for approval should be identified in the procedure.

The procedure should include the information or instructions prepared by sub-contractors or vendors, and declared applicable to its products by the TC, STC, approval of changes to type design or approval of repair design holders.

4.4 Statement

The information and instructions should contain a statement showing Agency approval.

5. Obligations addressed in 21.A.44 (TC holder), 21.A.118A (STC holder) or 21.A.451 (repair design approval holder)

The applicant should establish the necessary procedures to show to the Agency how it will fulfil the obligations required under 21.A.44, 21.A.118A or 21.A.451, as appropriate.

6. Control of design sub-contractors

The applicant should establish the necessary procedures to show to the Agency how it will control design sub-contractors.

<ED Decision 2014/007/R small 'operational suitability' additions>

GM No 1 to 21.A.15(d) Clarification of the term 'as applicable'.

21.A.15(d)

Appendix 1 to GM No 1 to 21.A.15(d)

The term 'as applicable' indicates that not all OSD constituents as listed in 21.A.15(d)(1) through (5) are always part of the OSD.

For example, when the operational rules do not require cabin crew for an aircraft with a certain number of passenger seats, the OSD constituent of (d)(4) is not required for the OSD of this aircraft. Another example is that a minimum syllabus for pilot type rating training is not required if the aircraft is in a class rating.

If a new aircraft type is considered a variant for licensing purposes a full syllabus for type rating training is not required, but the applicant can suffice with the syllabus for differences training.

Most of the OSD constituents are not applicable to aircraft in the category 'other-than-complex motor-powered'. In more detail:

- The requirement to produce minimum syllabi for type rating training of pilots is only applicable when the aircraft has a type rating. By default, most small aircraft will be in a class rating. However, the Agency can decide on an ad-hoc basis that a type rating is necessary due to performance, design or other features that require specific training. For most small aircraft this is not the case and they will be in a class rating. Whether a new aircraft type should have a type rating or can be in a class rating will be part of the OSD approval process and finally will be decided by the Agency. The assessment is based on objective criteria which are included in the certification specifications for the related OSD constituents. When no individual type rating is required for the aircraft, it means that the relevant OSD constituents are not required. Nevertheless, on a voluntary basis, the applicant can always provide a minimum syllabus for type rating training to be approved under OSD.

- The requirement to produce minimum syllabi for type rating training of maintenance certifying staff is only applicable for the aircraft required to have a type rating training, which are the aircraft in Group 1 as per Annex III of Regulation (EU) No 1321/2014 (66.A.5). When no individual type rating training is required for the aircraft, it means that the relevant OSD constituents are not required. Nevertheless, on a voluntary basis, the applicant can always provide a minimum syllabus for type rating training to be approved under OSD.
- The OSD constituent simulator data' is only required when the syllabus for pilot type rating training includes the use of full flight simulators or flight training devices (FTDs), Level 3 for helicopters. This is typically not the case for most small aircraft.
- The type-specific data for cabin crew training is only required when the operational rules require cabin crew for the maximum approved passenger seating capacity. Currently, cabin crew is required for aircraft with a maximum approved passenger seating configuration of more than 19, except when required through the certification basis. Small aircraft do not have this number of passenger seats.
- The requirement to establish an MEL is applicable to all complex motor-powered aircraft and to all aircraft that are used for commercial operations. This means that also for other-than-complex aircraft type certificate or restricted type-certificate an MMEL will be required. However, in order to minimise the burden on TC and STC applicants, the following applies:
- For other-than-complex aeroplanes excluding very light aeroplanes (VLA), light sport aeroplanes (LSA) and powered sailplanes, generic MMELs by means of a dedicated CS are established by the Agency. The TC or STC applicant for an aircraft or change to an aircraft within that category can suffice with identifying the items of the generic MMEL that are appropriate for its design. This does not preclude that the applicant may elect to develop a type-specific MMEL, using CS-MMEL.
- For ELA1 and ELA2 aircraft, the Agency considers that the list of required equipment as included in the TCDS and/or AFM/POH, in combination with equipment required for the flight by the associated implementing rules, such as operational requirements, airspace requirements and any other applicable requirements to the intended operation, establishes the list of equipment that must be operative for all flights. Other equipment may be inoperative and this constitutes the MMEL. Design approval applicants for these aircraft are, therefore, not required to establish an MMEL.

The applicability of the different OSD constituents is further clarified below in the tables of Appendix 1 to this GM.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R minor changes>

Appendix 1 to GM No 1 to 21.A.15(d)
OSD applicability tables

21.A.15(d)
GM No 1 to 21.A.15(d)

Note 1: These tables illustrate the applicability of OSD to new applications for TC.

Note 2: Unmanned aircraft have not been considered in these applicability tables.

Flight crew data (FCD)	
Aircraft categories	FCD required?
— Aeroplanes with: - above 5 700 kg maximum take-off mass (MTOM); or - more than 19 passengers; or - a minimum crew of two pilots; or - one turbojet engine; or - two or more turboprop engines; — helicopters except very light rotorcraft (VLR); — tilt rotors; and — gas airships.	YES
— Aeroplanes with: - 5 700 kg MTOM or less but above 2 000 kg; and - a minimum crew of one pilot; and - no turbojet engine; and - no more than one turboprop engine; and — VLR.	Generally: NO In some cases: YES. If based on operational experience, data, its handling characteristics, performance or level of flight deck technology, type rating training is required for its safe operation.[a]
— Aeroplanes with: - 2 000 kg MTOM or less; and - a minimum crew of one pilot; and - no turbojet engine; and -no more than one turboprop engine; — sailplanes, powered sailplanes; — balloons; and — hot-air airships.	NO

a. This is generally the case when the requirements for pilot licensing and air operations do not adequately address training, checking, or currency for safely operating the aircraft, or when the aircraft is not part of a class rating.

Simulator data (SIMD)	
Aircraft categories	SIMD required?
Aircraft for which FCD is required and the minimum syllabus refers to the use of: — a full flight simulator (FFS) for aeroplanes; or — an FFS or FTD Level 3 for helicopters.	YES
— Aircraft for which FCD is required but the minimum syllabus does not refer to the use of an FFS or FTD Level 3 for helicopters; and — aircraft for which FCD is not required.	NO

Cabin crew data (CCD)	
Aircraft categories	CCD required?
Aircraft with maximum passenger seating configuration of more than 19.	YES
Aircraft with maximum passenger seating configuration of 19 or less.	NO[a]

a.In exceptional cases, YES: cabin crew and, therefore, CCD may be required when it is needed to mitigate non-compliance with airworthiness requirements.

Maintenance certifying staff data (MCSD)	
Aircraft categories	MCSD required?
— Aeroplanes with: - above 5 700 kg MTOM; or - more than 19 passengers; or - a minimum crew of two pilots; or - turbojet; or - two or more turboprops; or - an operating altitude > FL290; or - fly-by-wire (FBW); — helicopters with: - above 3 175 kg MTOM; or - more than nine passengers; or - minimum crew of two pilots; or - FBW; or - more than one engine; and — tilt rotors.	YES
— Aeroplanes with: - MTOM of 5 700 kg or less; and - 19 passengers or less; and - minimum crew of one 1 pilot; and - one piston engine or one turboprop; and - an operating altitude < FL290; and - no FBW; — helicopters with: - MTOM of 3 175 kg or less; and - nine passengers or less; and - minimum crew of one pilot; and - no FBW; and - one engine; — sailplanes, powered sailplanes; — balloons; and — airships	NO[a]

a.In exceptional cases, YES: to be determined by the Agency. This should be understood as the legal basis enabling the Agency to decide on OSD-MCSD applicability to any aircraft that due to some of its novel/unusual/special technical elements, would benefit from an evaluation of MCSD. Whilst the regulation leaves the decision to the Agency, an internal formal process is needed in order to make such a decision following a TC application. It should be expected that this process would be based on the OSD-MCSD expert proposal with the support of cross-expert panels and after Product Certification Manager consultation.

Master minimum equipment list (MMEL)	
Aircraft categories	MMEL required?
— Aeroplanes with: - 5 700 kg MTOM or more; or - more than 19 passengers; or - a minimum crew of two pilots; or - turbojet; or - two or more turboprops; — helicopters with: - 3 175 kg MTOM; or - more than 9 passengers; or - a minimum crew of two pilots; or — tilt rotors.	YES: CS-MMEL

— Helicopters with: -less than 3 175 kg MTOM; and - 9 passengers or less; and - a minimum crew of one pilot; and - not being VLR; and — non-ELA2 airships.	YES: special condition based on CS-MMEL
CS-23 aeroplanes with: — less than 5 700 kg MTOM; and — 19 passengers or less; and — a minimum crew of one pilot; and — one piston engine or one turboprop; and — not being ELA1 or ELA2	YES: CS-GEN-MMEL
ELA1 or ELA2 aircraft.	NO: concept of 'required equipment'

<ED Decision 2016/007/R new Appendix>

GM No 2 to 21.A.15(d) Determination of type or variant

21.A.15(d)

The criteria for the determination whether an aircraft with a new type certificate (TC) is considered a new type or is a variant with reference to another aircraft type from the same TC holder for the purpose of the specific OSD constituent, are provided in the applicable certification specifications for maintenance certifying staff data, flight crew data and cabin crew data.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R minor changes>

GM No 3 to 21.A.15(d) OSD content

21.A.15(d)

The OSD will typically consist of elements that are required to be included by the TC applicant and elements that can be added at the request of the TC applicant. (see also GM No.4 to 21.A.15(d)).

Both the required elements and the additional elements will have a part that is mandatory to be used by the operator or training organisation (status of rule) and a part which is not mandatory to the operator or training organisation (status of AMC). For illustration of this concept figure 1 below is included.

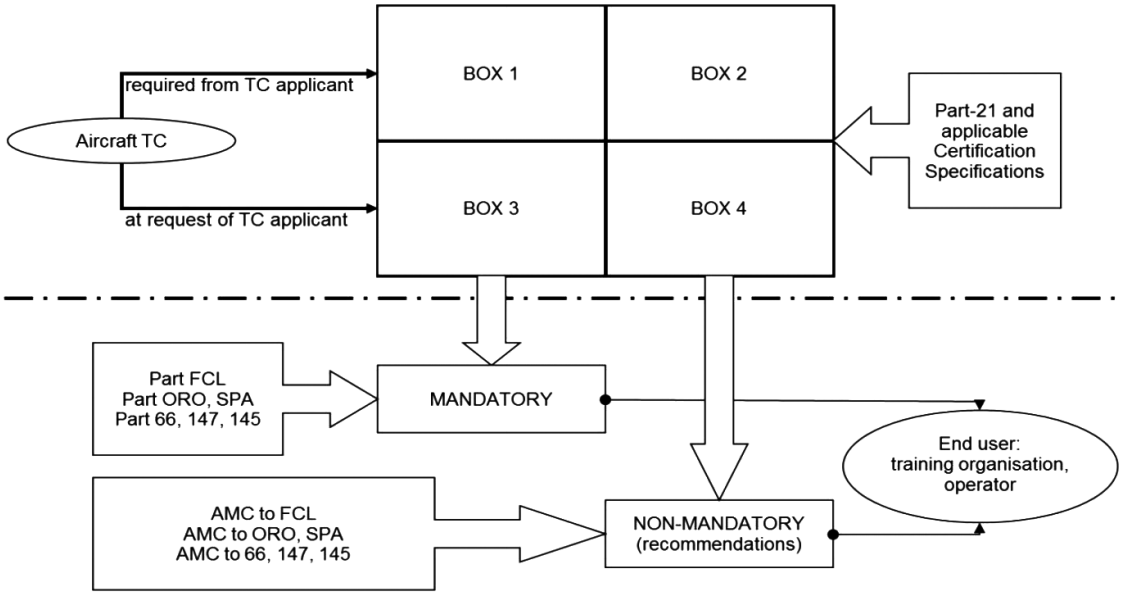


Figure 1:OSD boxes concept

Box 1: required from TC holder; mandatory for end-users.

Box 2: required from TC holder; not mandatory (recommendations) for end-users.

Box 3: at request of TC holder; mandatory for end-users.

The TC applicant may wish to apply for the approval of differences training between variants or types to reduce training, checking or currency requirements for operations of more than one type or variant. This is regarded as an optional element in addition to the required elements of Box 1 and 2.

Box 4: at request of TC holder; not mandatory (recommendations) for end-users.

The exact content of the four boxes in the above figure is determined by the certification specification that is applicable to the specific OSD constituent or the special condition in case of an ‘other type-related operational suitability element’.

The status the data will have on the side of the operator or training organisation should be indicated in the OSD by segregating the data in a section called 'Mandatory' and a section called 'Non-mandatory (recommendations)'.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R minor changes>

GM No 4 to 21.A.15(d) Scope of operational suitability data.

21.A.15(d)

In the application-extension for approval of operational suitability data, the TC applicant may apply for the approval of different types of operations. If the aircraft is certificated for certain types of operations (e.g. ETOPS, RNP, LVO), the impact on the OSD constituenta of 21.A.15(d) should be addressed.

The five defined OSD constituents are listed in 21.A.15(d)(1) through (5). As explained in GM No 1 to 21.A.15(d), they may not be all applicable to all aircraft types. The content of each of the OSD constituents is defined in the relevant certification specification and will be approved under a type certificate (TC), supplemental type certificate (STC) or change to those certificates. As explained in GM No 3 to 21.A.15(d), each OSD constituent can have a part that is mandatory for the end-user (operator, training organisation, etc.) and a part that is not mandatory (recommendation) for the end-user. However, both the mandatory and the non-mandatory part together are the OSD constituent. Furthermore, the OSD constituent always includes the element required from the TC/STC applicant, as specified in the CS, and may include additional element at the request of the TC/STC applicant, but still as defined in the CS.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R later paragraph new>

GM No 1 to 21.A.15(d)6 Other type-related operational suitability elements

21.A.15(d)6

In addition to the five defined OSD constituents, there may be other data which could qualify as OSD when it is relevant for the operational suitability of the aircraft type, is not included in the type design and is specific to that aircraft type.

The term ‘element’ as used in this GM carries its normal dictionary meaning, i.e. part, portion, component, etc.

In order for this ‘element’ to qualify as ‘other type-related operational suitability element’, the following conditions apply:

- it concerns data (not the approval of equipment);
- the data is type specific;
    - the data is not already be part of the ‘classic’ part of the type certificate (TC) (such as Airworthiness Limitations Section (ALS), aircraft flight manual (AFM), etc.);
- the data is relevant for the safe operation of the aircraft type; and
- conditions/criteria for the approval of the data can be established.

The other type-related operational suitability elements can only contain data that is not mandatory for the end-users unless they are covered by one of the existing requirements in Regulations (EU) Nos 965/2012, 1178/2011 or 1321/2014 referring to OSD approved in accordance with Part-21.

If data can be included in one of the five defined OSD constituents, it does not qualify as an additional operational suitability element under 21.A.15(d)6. For example, the pilot training necessary to introduce an electronic flight bag (EFB) can be included in the OSD constituent flight crew data (FCD), and is not considered an additional operational suitability element.

<ED Decision 2016/007/R new>

GM 21.A.17B (a)(1) Reference date for operational suitability certification basis

21.A.17B (a)(1)

The date of application as referred to in 21.A.17B (a)(1) is the date of the TC application when this includes operational suitability data, or the date the application was supplemented to include operational suitability data.

<ED Decision 2014/007/R new GM>

GM 21.A.16B Special Conditions

21.A.16B

21.A.16B introduces 3 categories of special conditions:

1. Novel and unusual design features;
2. Unconventional use of product;
3. Service experience has shown that unsafe conditions may exist.

However, the need for a special condition based on in-service experience should be judged by using the following points as benchmarks:

- The words 'unsafe conditions' are used in GM 21.A.3B(b) to justify the basis for an airworthiness directive.
- The words 'continued safe flight and landing', according to AMC 25.1309, mean the capability for continued controlled flight and landing, possibly using emergency procedures, but without requiring exceptional pilot skill or strength. Some aircraft damage may be associated with a failure condition, during flight or upon landing.

AMC 21.A.20(b) Certification programme

21.A.20(b)

Appendix to AMC 21.A.20(b) - Means of compliance codes

1. For a particular project and as part of the technical familiarisation, the applicant provides a certification programme that includes:
   1.1 a plan containing the following information:
   - Description of the project and the kind of operations envisaged
   - The proposed certification specifications, special conditions, equivalent safety findings and environmental protection requirements
   - The description on how compliance will be demonstrated, with proposed means of compliance (see appendix to this AMC below for codes), and any selected guidance material. The description of the means of compliance should be sufficient to determine that all necessary data will be collected and compliance can be demonstrated.
   - A compliance checklist addressing each paragraphs of the type-certification basis, the operational suitability certification basis and environmental protection requirements applicable to the project, with reference to the means of compliance and to the related compliance documents.
   - Identification of relevant personnel making decisions affecting airworthiness, operational suitability and environmental protection interfacing with the Agency, unless otherwise identified to the Agency;

   1.2 a project schedule including major milestones.
2. The certification programme can be developed step by step, when the information needed is not available at the beginning of the project.
3. For a simple project, the certification programme can be proposed with the application.
4. The certification programme can be based on modules that can be updated independently.

<ED Decision 2014/007/R small changes>

Appendix to AMC 21.A.20(b) - Means of compliance codes

21.A.20(b)

Type of Compliance	Means of Compliance	Associated Compliance Documents
Engineering evaluation	MC0 : - Compliance statement - Reference to Type Design documents - Election of methods, factors .... - Definitions	- Type Design documents - Recorded statements
	MC1: Design review	- Descriptions - Drawings
	MC2: Calculation/ Analysis	- Substantiation reports
	MC3: Safety assessment	- Safety analysis
Tests	MC4: Laboratory tests	- Test programmes - Test reports - Test interpretations
	MC5: Ground tests on related product	
	MC6: Flight tests	
	MC8: Simulation	
Inspection	MC7: Design inspection/ audit	- Inspection or audit reports
Equipment qualification	MC9: Equipment qualification	*Note : Equipment qualification is a process which may include all previous means of compliance.*

GM 21.A.20(b) Update to the Certification Programme

21.A.20(b)

The applicant should keep the certification programme current throughout the project and submit all revised elements to the Agency.

AMC 21.A.20(c) Compliance documentation

21.A.20(c)

1. Compliance documentation comprises of one or more reports, drawings, specifications, calculations, analysis etc. and provides a record of the means by which compliance with the applicable type-certification basis, the operational suitability certification basis and environmental protection requirements is demonstrated.
2. Each compliance document should normally contain:
   - an adequate link with the corresponding certification programme
   - the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document
   - data demonstrating compliance
   - a statement by the applicant declaring that the document provides the proof of compliance for which it has been created
   - the appropriate authorised signature.
3. Each compliance document should have a number and issue date. The various issues of a document should be controlled.

<ED Decision 2014/007/R small changes in 1.>

GM 21.A.20(d) Final statement

21.A.20(d)

All compliance demonstrations should be completed before issuance of the final statement of compliance required by 21.A.20(d).

If so agreed by the Agency, some compliance documentation may be produced after issuance of the final statement of compliance required by 21.A.20(d).

GM No 1 to 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 Approval of OSD

21.A.21(f)
21.A.23(b)
21.A.103(a)4

It is acknowledged that it may not always be possible to have the operational suitability data available on the date of the issue of the type certificate (TC), change approval or STC. The derogation provided by 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 are intended for that case. The TC, change approval or STC can be issued before compliance with the operational suitability data certification basis has been demonstrated. However, the OSD should be approved before the data must be used by a training organisation for the purpose of obtaining a European Union licence, rating or attestation, or by an EU operator. This is normally done upon entry into service of the first aircraft by an EU operator but could also be later for some of the OSD constituents, such as definition of scope of validation source data to support the objective qualification of a simulator, which should only be available when a simulator has to be qualified.

The derogation in 21.A.103(a)(4) is applicable to all major changes to TC, so also to minor design changes when triggering a major MMEL change, and also to changes where only one of the OSD constituent changes is major.

However, there may be a need to make one or several OSD constituets available before the entry into service. For example, there may be a need to start training activities before all OSD constituents contained in the OSD application can be approved. Making use of the derogation in 21.A.21(f), 21.A.23(b) or 21.A.103(a)(4), the relevant OSD constituent can be approved under the TC, a change approval or the STC, the use of which can then be limited to specific purposes.

There may, in some specific cases, even be a need to make provisional OSD available before the TC (or STC) is issued. In such cases, before the availability of a complete and fully compliant OSD, the Agency can confirm partial compliance of only one or several provisional OSD constituents.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R grammar corrections>

GM 21.A.33 Inspection and Tests

21.A.33

The requirements of 21.A.33(a) should not preclude the applicant requesting the Agency to make flight or other tests of particular aspects of the product during its development and before the type design is fully defined and a Declaration of Compliance can be issued for all the applicable certification specifications (CS). However in case of flight test the applicant should have performed subject tests before the Agency tests and should ensure that no features of the product preclude the safe conduct of the evaluation requested. The Agency may require to repeat any such tests once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation. A statement of compliance with point 21.A.33(b) is also required for the above tests.

GM 21.A.35 Flight Tests

21.A.35

Detailed material on flight testing is included in the applicable CS and GM.

GM 21.A.35(b)(2) Objective and Content of Function and Reliability Testing

21.A.35(b)(2)

1. OBJECTIVE

The objective of this testing 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.

2. CONTENT OF FUNCTION AND RELIABILITY TESTING

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

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

Where possible, testing conditions should be defined with the co-operation of an operator.

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.

GM 21.A.35(f)(1) Flying Time for Function and Reliability Testing

21.A.35(f)(1)

All flying carried out with engines and associated systems not significantly different from the final type-certificate standard may count towards the 300 hours airframe flight time required by 21.A.35(f)(1). At least 150 of the 300 flying hours should be conducted on a dedicated production configured aircraft. The requirement for 300 hours relevant flight time whenever a n ew turbine engine is incorporated applies regardless of whether the airframe/engine combination is subject to a new type-certificate or is to be certificated as a change or supplement to an existing type-certificate.

GM 21.A.35(f)(2) Flying Time for Function and Reliability Testing

21.A.35(f)(2)

All flying carried out on an aircraft not significantly different from the final type design may count towards the 150 hours airframe flight time required by 21.A.35(f)(2).

GM to 21.A.62, 21.A108 and 21.A.120B Availability of Operational

21.A.62
21.A108
21.A.120B

Suitability Data

(a) When making data available, the holder of the design approval (TC, change approval, STC) should take into account the applicable security laws.

(b) When making data available, the holder of the design approval can impose conditions addressing the intellectual property nature of the data.

<ED Decision 2014/007/R new GM>

GM to 21.A.90A Scope

21.A.90A

The term ‘changes to the type certificate’ is consistently used in Part-21, Subpart D and E, 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 the concept of TC as defined in 21.A.41. It means that the processes for approval of changes, as described in the said two Subparts, do not only apply to changes to the type design, but may also apply to changes to:

- the operating limitations;
- the type certificate data sheet (TCDS) for airworthiness and emissions;
- the applicable type certification basis and environmental protection requirements with which the Agency demonstrates compliance;
- any other conditions or limitations prescribed for the product in the applicable certification specifications (CSs) and environmental protection requirements;
- the applicable operational suitability data (OSD) certification basis;
- the OSD; and
- the TCDS for noise.

NOTE: OSD is only applicable to aircraft TCs and not engine or propeller TCs. Therefore, changes to OSD are on-

ly relevant for changes to aircraft TCs.

<ED Decision 2014/007/R new GM>
<ED Decision 2016/007/R rewrite>

GM 21.A.90B Standard changes — Certification Specifications

21.A.90B

CS-STAN contains the certification specifications referred to in 21.A.90B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in AMC M.A.801 of the AMC to Part-M.

<ED Decision 2015/016/R new GM>

Subpart D - Changes to type-certificates and restricted type certificates

GM 21.A.91 Classification of changes to type certificate

21.A.91

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

1. PURPOSE OF CLASSIFICATION

Classification of changes to a type certificate (TC) into MAJOR or MINOR is to determine the approval route to be followed in Part 21 Subpart D, i.e., either 21.A.95 or 21.A.97, or alternatively whether application and approval has to be made in accordance with Part-21 Subpart E.

2. INTRODUCTION

2.1 21.A.91 proposes criteria for the classification of changes to a TC as minor or major.

(a) This GM is intended to provide guidance on the term 'appreciable effect' affecting the airworthiness of the product or affecting any of the other characteristics mentioned in 21.A.91, where 'airworthiness' is interpreted in the context of a product 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 fulfil the requirements of 21.A.91 and 21.A.117 where classification is the first step of a procedure.

Note: For classification of Repairs see GM 21.A.435.

(b) Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in 21.A.91, the GM and 21.A.91 are deemed entirely compatible.

2.2 For an ETSO authorisation, 21.A.611 gives specific additional requirements for design changes to ETSO articles.

For APU, this GM 21.A.91 should be used.

3. ASSESSMENT OF A CHANGE FOR CLASSIFICATION

3.1 Changes to the TC

21.A.91 addresses changes to all aspects of a TC. This includes changes to type design, as defined in 21.A.31, as well as to the other constituents of a TC, as defined in 21.A.41. This GM provides guidance on changes to the type design and changes to the operational suitability data (OSD). A change to a TC can include a change to the type design and/or a change to the OSD.

3.2 Separate classification for type design and OSD Although in the end, the change to the TC, which includes a change to type design and a change to OSD, will have only one classification, it will be possible to classify the different components of the change independently. This will facilitate the approval of a major change with no verification by the Agency of the OSD component if the change to OSD is considered minor, or with no verification by the Agency of the design change if the design change is considered minor (see also GM to 21.A.103).

<propably GM No 1 to 21.A.21(f), 21.A.23(b) and 21.A.103(a)4 Approval of OSD >

3.3 Classification Process (see attached diagram)

21.A.91 requires all changes to be classified as either major or minor, using the criteria of 21.A.91 4.

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

When the strict application of the paragraph 3.4 criteria results in a major classification, the applicant may request re-classification, if justified, and the Agency could take the responsibility in re-classifying the change.

A simple design change planned to be mandated by an airworthiness directive may be re-classified minor due to the involvement of the Agency in the continued airworthiness process.

Reasons for a classification decision should be recorded.

3.4 Complementary guidance for classification of changes.

A change to the TC is judged to have an 'appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emission, operational suitability or other characteristics affecting the airworthiness of the product' and therefore, should be classified as major, in particular but not only when one or more of the following conditions are met:

(a) where the change requires an adjustment of the type-certification basis or the OSD certification basis (special conditions or equivalent safety findings other than elect to comply with later certification specifications;

(b) where the applicant proposes a new interpretation of the certification specifications used for the type certification basis or the OSD certification basis, that has not been published as AMC material or otherwise agreed with the Agency;

(c) where the demonstration of compliance uses methods that have not been previously accepted as appropriate for the nature of the change;

(d) 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 re-assessed and re-evaluated is considerable;

(e) where the change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (ref. 21.A.3B), see Note 1 and

(f) where the change introduces or affects functions where the failure effect is classified catastrophic or hazardous.

Note 1: The change previously classified minor and approved prior to the airworthiness directive issuance decision needs no re-classification. However, the Agency retains the right to review the change and re-classify/re-approve if found necessary.

Note 2: These above conditions are an explanation of the criteria noted in 21.A.91.

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 21.A.91.

3.5 Complementary guidance on the classification of changes to OSD

This paragraph provides firstly general guidance on minor OSD change classification, and secondly additional guidance specific to each OSD constituent.

Changes to OSD are considered minor when they:

- incorporate optional information (representing improvements/enhancements);
- provide clarifications, interpretations, definitions or advisory text; or
- do not change the intent of the OSD document, e.g. changes to:
  - titles, numbering, formatting, applicability;
  - order, sequence, pagination; or
  - sketches, figures, units of measurement, and correction of editorial mistakes such as:
    - spelling; or
    - reference numbers.

Given the structure and individual intent of the separate OSD constituents, the interpretation of 'appreciable' is also affected by the specific nature of the applicable certification specifications (CS) for that constituent. Therefore, specific guidance on each of the OSD constituents is provided hereafter.

(a) Master minimum equipment list (MMEL)

(1) A change to the MMEL is judged to have an 'appreciable effect on the operational suitability of the aircraft' and, therefore, should be 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 OSD certification basis;

(ii) where the applicant proposes changes to the means of compliance with the requirements used for the OSD certification basis (i.e. MMEL safety methodology);

(iii) where the extent of substantiation data and the degree to which the substantiation data has to be assessed and evaluated is considerable, in particular but not only when:

(A) the substantiation data involving the review of failure conditions that are classified as hazardous or catastrophic has to be evaluated;

(B) the assessment of the failure effects (including next worst failure/event effects) on crew workload and the applicable crew procedures has to be evaluated; or

(C) the capability of the aircraft to perform types of operation (e.g. extended-range twin operations (ETOPS), instrument flight rules (IFR)) under MMEL is extended.

(2) A change to the MMEL is judged not to have an 'appreciable effect on the operational suitability of the aircraft' and, therefore, should be classified as minor, in particular but not only when one or more of the following conditions are met:
Modifications to an existing item when:

(i) the change only corresponds to the applicability of an item for configuration management purposes;

(ii) the change corresponds to the removal of an item;

(iii) the change corresponds to the increase in the number of items required for dispatch; and

(iv) the change corresponds to a reduction in the rectification interval of an item.

Addition of a new item when:

(v) it is considered as non-safety-related (refer to CS-MMEL, GM2 MMEL.110); or

(vi) it is indicated as eligible for minor change classification in 1 to GM1 CS-MMEL-145.

(b) Flight crew data (FCD)

(1) FCD change related to change to the type design
When classifying the FCD change as minor or major, the method of CS-FCD, Subpart D should be used.

(i) An analysis should be performed to assess the change impact on the FCD through the allocation of difference levels realised with operator difference requirement (ODR) tables as per CS FCD.400. In this case, the base aircraft is the aircraft without the type design change, whereas the candidate aircraft is the aircraft which includes the type design change.

(A) If a no more than level B difference is assigned for training, checking and currency for the candidate aircraft, the related FCD change should be classified as minor.

(B) If a difference level C, D or E for training, checking and currency is assigned to the candidate aircraft, the related FCD change should be classified as major.

(ii) Notwithstanding the above, the change to FCD should be classified as major when a T1 or T2 test is found necessary by the applicant to confirm that the aircraft with the type design change is not a new type for pilot type rating.

(2) Stand-alone changes to FCD are not related to any type design changes. They may be triggered for example by in-service experience or by the introduction of data at the request of the applicant after type certification.

(i) Introduction of credits in training, checking or currency should be classified as major. Example: addition of further-differences training, common take-off and landing credits, etc.

(ii) Stand-alone changes to FCD that correspond to a change of the intent of a data should be classified as major. Example: addition of a training area of special emphasis (TASE) or prerequisite, expansion of a TASE.

(c) Cabin crew data (CCD)

(1) OSD change related to change to the type design
When classifying the OSD CCD change as minor or major, the method from CS-CCD, Subpart B should be used.

(i) An analysis should be performed to assess the change impact on the OSD CCD through the identification of the difference and its impact on operation in the aircraft difference table (ADT) as per CS CCD.200. In this case, the base aircraft is the aircraft without the type design change, whereas the candidate aircraft is the aircraft which includes the type design change.

(A) If the difference has no impact on the operation of an element of the ADT for the candidate aircraft, the related OSD CCD change should be classified as minor.

(B) If the difference has an impact on the operation of an element of the ADT for the candidate aircraft, the related OSD CCD change should be classified as major.

(ii) Notwithstanding the above, the change to OSD CCD should be classified as major when an ADT analysis is found necessary by the applicant to confirm that the aircraft with the type design change is not a new type for cabin crew.

(2) Stand-alone changes to OSD CCD are not related to any type design changes. They may be triggered for example by in-service experience or by the introduction of data at the request of the applicant after type certification.

(i) Stand-alone changes to cabin aspects of special emphasis (CASE) should be classified as major. Example: addition of further CASE, expansion of CASE.

(ii) When classifying stand-alone changes to type-specific data for cabin crew the method from CS-CCD, Subpart B should be used. An analysis should be performed to assess the change impact on the type-specific data through the identification of the difference and its impact on operation in the ADT as per CS CCD.200.

(A) If the change does not concern a determination element of CS CCD.205, the stand-alone change should be classified as minor.

(B) If the change has no impact on the operation of an element of the ADT, the stand-alone change should be classified as minor.

(C) If the change has an impact on the operation of an element of the ADT, the stand-alone change should be classified as major.

(d) Simulator data (SIMD)

The OSD constituent 'simulator data' does not include the data package that is necessary to build the simulator. It includes only the definition of the scope of validation source data to support the objective qualification of a simulator. So, when this guidance discusses changes to 'simulator data', this concerns only changes to the 'definition of scope of validation source data' and not changes to the data package.

(1) A change to the SIMD should be classified as major, in particular but not only when one or more of the following conditions are met:

(i) when a change to the SIMD introduces validation source data from an engineering platform where the process to derive such data has not been audited by the Agency in the initial SIMD approval; or

(ii) when the process to derive validation source data from an engineering platform is changed.

(2) A change to the SIMD could be classified as minor, in particular but not only when one or more of the following conditions are met:

(i) changes to engineering validation data independent of the aircraft due to improvements or corrections in simulation modelling (e.g. aerodynamics, propulsion);

(ii) configuration changes to the aircraft where the process to derive validation source data from an engineering platform is unchanged;

(iii) changes to validation source data by using better, more applicable flight test data; or

(iv) editorial changes to the validation data roadmap (VDR).

(e) Maintenance certifying staff data (MCSD)

[Reserved]

<ED Decision 2016/007/R wordings and new 3.5>

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

GM 21.A.91

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

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

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

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

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

1. Structure
   (i) changes such as a cargo door cut-out, fuselage plugs, change of dihedral, addition of floats;
   (ii) changes to materials, processes or methods of manufacture of primary structural elements, such as spars, frames and critical parts;
   (iii) changes that adversely affect fatigue or damage tolerance or life limit characteristics;
   (iv) changes that adversely affect aeroelastic characteristics.
2. Cabin Safety
   (i) changes which introduce a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.
   Items to consider include, but are not limited to, :
   - changes to or introduction of dynamically tested seats.
   - change to the pitch between seat rows.
   - change of distance between seat and adjacent obstacle like a divider.
   - changes to cabin lay outs that affect evacuation path or access to exits.
   - installation of new galleys, toilets, wardrobes, etc.
   - installation of new type of electrically powered galley insert.

   (ii) changes to the pressurisation control system which adversely affect previously approved limitations.
3. Flight
   Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance.
   Changes which adversely affect the flight envelope.
   Changes which adversely affect the handling qualities of the product including changes to the flight controls function (gains adjustments, functional modification to software) or changes to the flight protection or warning system.
4. Systems
   For systems assessed under CS 25.1309, the classification process is based on the functional aspects of the change and its potential effects on safety.
   (i) Where failure effect is 'Catastrophic' or 'Hazardous', the change should be classified as major.
   (ii) Where failure effect is 'major', the change should be classified as major if:
   - aspects of the compliance demonstration use means that have not been previously accepted for the nature of the change to the system; or
   - the change affects the pilot/system interface (displays, controls, approved procedures); or
   - the change introduces new types of functions/systems such as GPS primary, TCAS, Predictive windshear, HUD.

   The assessment of the criteria for software changes to systems also needs to be performed.
   When software is involved, account should be taken also of the following guidelines:
   Where a change is made to software produced in accordance with the guidelines of the latest edition of AMC 20-115 (see AMC-20 document) the change should be classified as major if either of the following apply, and the failure effect is Catastrophic, Hazardous or Major:
   (i) the executable code for software, determined to be Level A or Level B in accordance with the guidelines, is changed unless that change involves only a variation of a parameter value within a range already verified for the previous certification standard; or
   (ii) the software is upgraded to or downgraded from Level A, Level B or Level C; or
   (iii) the executable code, determined to be level C, is deeply changed, e.g., after a software re-engineering process accompanying a change of processor.

   For software developed to guidelines other than the latest edition of AMC 20-115, the applicant should assess changes in accordance with the foregoing principles.
   For other codes the principles noted above may be used. However, due consideration should be given to specific certification specifications/interpretations.
5. Propellers
   Changes to:
   - diameter

- airfoil
- planform
- material
- blade retention system, etc.

6. Engines

Changes:

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

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

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

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

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

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

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

7. Rotors and drive systems

Changes that:

(i) adversely affect fatigue evaluation unless the service life or inspection interval are unchanged. This includes changes to materials, processes or methods of manufacture of parts, such as
- rotor blades
- rotor hubs including dampers and controls
- gears
- drive shafts
- couplings

(ii) affect systems the failure of which may have hazardous or catastrophic effects. The design assessment will include:
- cooling system
- lubrication system
- rotor controls

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

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

8. Environment

The introductory text to Appendix A to GM 21.A.91 describes how in Part 21 a negative definition is given of minor changes only. This philosophy is similar to the manner in which the ICAO Standards and Recommended Practices for environmental protection (ICAO Annex 16) and the associated Guidance Material (ICAO Environmental Technical Manual) define changes affecting a product's environmental characteristics in terms of 'no-acoustical changes' and 'no-emissions changes' (i.e. changes which do not appreciably affect the product's environmental characteristics).

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

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

An appreciable effect is considered to be one which exceeds the ICAO criteria for a no-acoustical change or a no-emissions change. For the definition of a no-acoustical change refer to the section of the ICAO Environmental Technical Manual, Volume I (ICAO Doc 9501, Volume I - Procedures for the Noise Certification of

Aircraft) concerning changes to aircraft type designs involving no-acoustical changes (see also the definitions of a 'derived version' in ICAO Annex 16, Volume I). For the definition of a no-emissions change refer to the section of the ICAO Environmental Technical Manual, Volume II (ICAO Doc 9501, Volume II - Procedures for the Emissions Certification of Aircraft Engines) concerning no-emissions changes.

(i) Noise: A change that introduces either:
- an increase in the noise certification level(s); or
- a reduction in the noise certification level(s) for which the applicant wishes to take credit.

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

(1) For jet and heavy (maximum take-off mass greater than 8618 kg) propeller-driven aeroplanes:
- A change that might affect the aircraft's take-off performance including:
  - a change to the maximum take-off mass;
  - a change to V2 ('take-off safety speed'); or
  - a change to the lift augmentation devices, including their configuration under normal take-off operating conditions.
- A change that might affect the aircraft's landing performance including:
  - a change to the maximum landing mass;
  - a change to VREF (reference landing speed); or
- a change to the lift augmentation devices, including their deployment under normal landing operating conditions.
- A change to the Centre of Gravity (CG) limits;
- A change that increases the aircraft's drag;
- A change that alters the external profile of the aircraft, including the installation or change of shape or size of any item on the external surface of the aircraft that might protrude into the airflow such as winglets and vortex generators; generally the installation of small antennas does not represent an acoustical change;
- A change that introduces an open-ended hollow cavity at more or less right angles to the airflow (e.g. hollow pins in undercarriage assemblies);
- A change of engine or, if fitted, propeller type;
- A change in engine thrust rating;
- A change to the engine rotating parts or stators, such as geometry, blade profile or blade number;
- A change to the aerodynamic flow lines through the engine;
- A change that affects the engine thermodynamic cycle, including a change to the engine's bypass ratio;
- A change to the engine nacelle, including a change to the acoustic liners;
- A change to the engine exhaust;
- A change to the engine bleed valves, including bleed valve scheduling;
- A change in the operation of engine power off-takes (e.g. the operation of the Environmental Control System (ECS) during a normal take-off or approach);
- A change to the Auxiliary Power Unit (APU), including associated operating limitations (e.g. a change that allows the APU to be operated during a normal approach when previously it was not allowed);
- A change to the propeller pitch and/or propeller speed during a normal take-off or approach;
- A change that causes a change to the angle at which air flows into the propeller.

(2) For light (maximum take-off mass 8618 kg or less) propeller-driven aeroplanes:
- A change that might affect the aircraft's take-off performance including:
  - a change to the maximum take-off mass;
  - a change to the take-off distance;
  - a change to the rate of climb; or
  - a change to Vy (best rate of climb speed).
- A change that increases the aircraft's drag (e.g. the installation of external cargo pods, external fuel tanks, larger tyres to a fixed undercarriage, floats etc.);
- A change of engine or propeller type;

- A change in take-off power including a change in engine speed (tachometer 'red line') or, for piston engines, a change to the manifold pressure limitations;
- A change to the highest power in the normal operating range ('top of green arc');
- In the case of an aircraft where take-off power/engine speed is time limited, a change in the period over which take-off power/engine speed may be applied;
- A change to the engine inlet or exhaust including, if fitted, the inlet or exhaust muffler;
- A change in propeller diameter, tip shape, blade thickness or the number of blades;
- The installation of a variable or adjustable pitch propeller in place of a fixed pitch propeller and vice versa;
- A change that causes a change to the angle at which air flows into the propeller.

(3) For helicopters:

- A change that might affect the take-off and/or landing performance, including a change in take-off mass and VY (best rate of climb speed);
- A change to VNE (never-exceed airspeed) or to VH (airspeed in level flight obtained using the torque corresponding to minimum engine installed, maximum continuous power available for sea level pressure, 25°C ambient conditions at the relevant maximum certificated mass);
- A change to the maximum take-off engine power or maximum continuous power;
- A change to the gearbox torque limits;
- A change of engine type;
- A change to the engine intake or exhaust;
- A change to the maximum normal operating rpm of the main or tail rotors;
- A change to the main or tail rotors, including a change in diameter, blade thickness or blade tip profile.

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

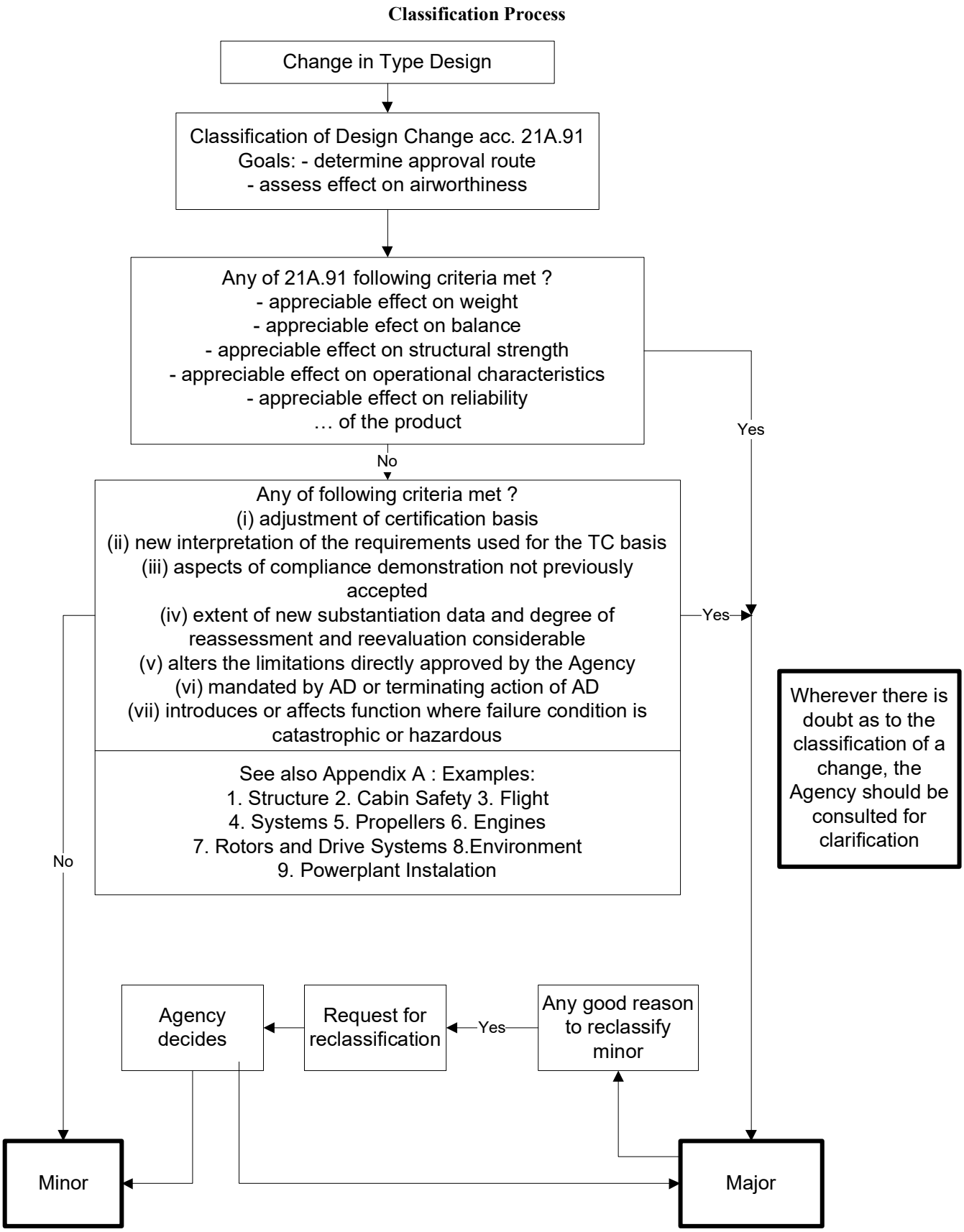
(ii) Emissions: A change that introduces an increase or decrease in the emissions certification levels. Examples of smoke and gaseous engine emission-related changes that might lead to a major change classification are:

- A change in engine thrust rating;
- A change to the aerodynamic flow lines through the engine;
- A change that affects the engine thermodynamic cycle, specifically relevant engine cycle parameters (e.g. combustor pressure P3, combustor entry temperature T3, Air Fuel Ratio (AFR));
- A change to the compressor that might influence the combustor inlet conditions and engine overall pressure ratio;
- A change to the combustor design (geometry);
- A change to the cooling of the combustor;
- A change to the air mass flow through the combustor;
- A change that affects the fuel spray characteristics.

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.



GM 21.A.93(b) Major Changes: Application

21.A.93(b)

Identification of re-investigations necessary to demonstrate compliance does not mean the demonstrating of compliance itself, but the list of affected certification specifications for which a new demonstration is necessary, together with the means (calculation, test or analysis) by which it is proposed to demonstrate compliance.

GM No 1 to 21.A.93(c) Interaction of changes to the type design and changes to operational suitability data (OSD)

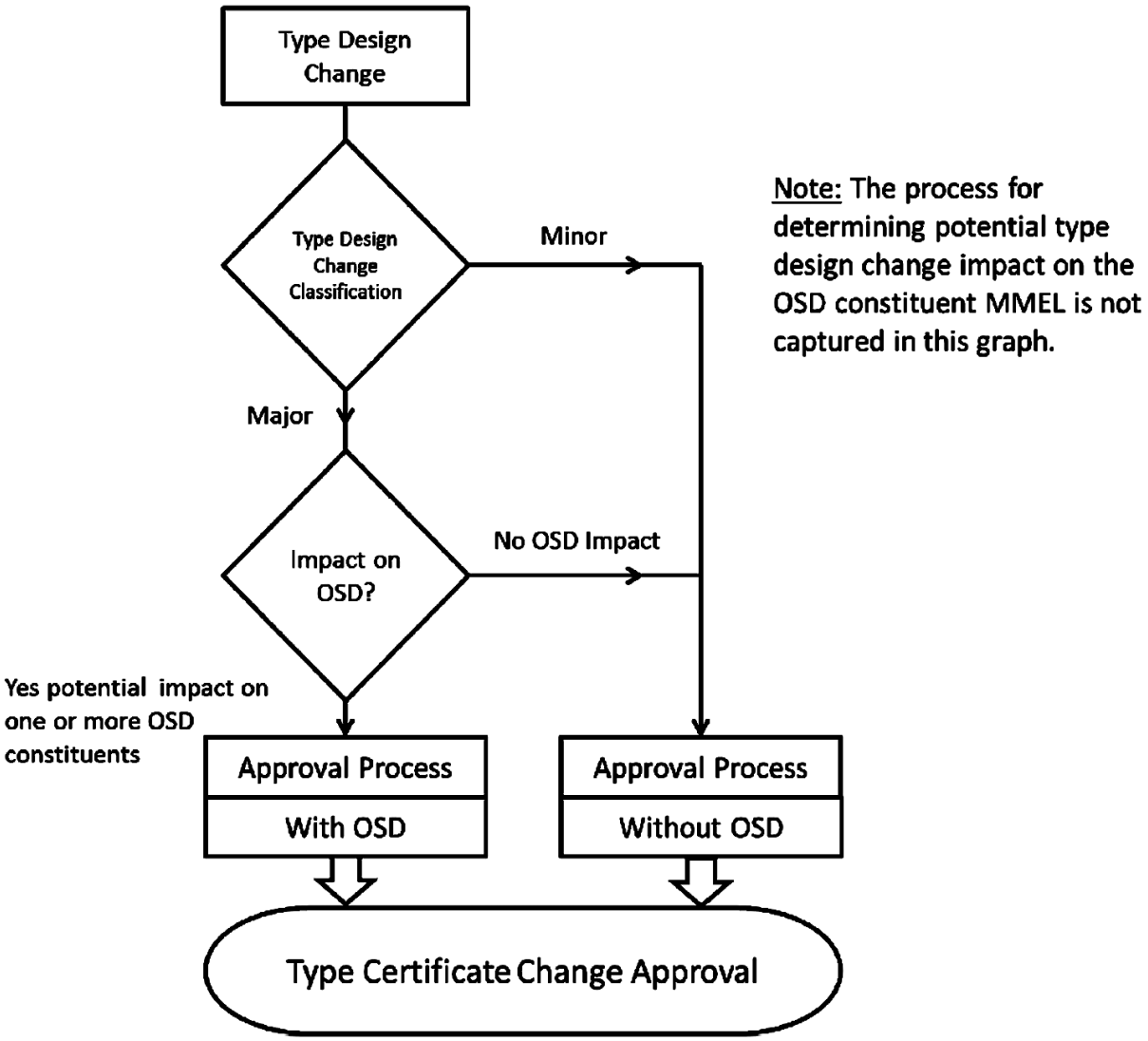
21.A.93(c)

In general, it has to be assumed that changes to the type design can have an effect on the OSD.

Due to the alleviating nature of the OSD constituent master minimum equipment list (MMEL), the impact of design changes on MMEL can be treated differently from the impact on other OSD constituents. Therefore, a separate GM No 2 to 21.A.93(c) is available to explain the interaction between design changes and MMEL. The following guidance is, therefore, only applicable to the other OSD constituents: flight crew data (FCD), cabin crew data (CCD), simulator data (SIMD), and maintenance certifying staff data (MCSD).

In assessing the interactions between the changes to the type design and to the OSD, the following can be taken into consideration (see Figure 1):

Figure 1



(a) Changes to the type certificate (TC) that only include a minor change to the type design ('stand-alone' type design changes) do not have an effect on the OSD. No dedicated assessment of the effects of the minor type design change on the OSD is needed in this case.

(b) TC changes that only include a major type design change do not need to be assessed for their effect on the OSD in case the experience of the applicant has demonstrated that similar changes do not have an effect on the OSD. Examples of major type design changes and their expected effect on OSD constituents are identified in Table 1 below.

Table 1: Examples of major type design changes and their expected impact on OSD constituents

Discipline	Example of major type design change	Expected impact on OSD constituent			
		FCD	SIMD	CCD	MCSD
Structure	(i) Changes such as a cargo door cut-out, fuselage plugs, change to dihedral, addition of floats.	No	No	No	tbd[a]
	(ii) Changes to material, processes or methods of manufacture, or to primary structural elements such as spars, frames and critical parts.	No	No	No	tbd
	(iii) Changes that adversely affect fatigue or damage tolerance or life limit characteristics.	No	No	No	tbd
	(iv) Changes that adversely affect aeroelastic characteristics.	No	No	No	tbd
	(v) Aircraft weight changes such as maximum zero fuel weight (MZFW) changes or reduction in maximum take-off weight (MTOW) for operational considerations.	No	No	No	No
Cabin safety	(i) Changes which introduce a new cabin layout of a sufficient extent to require a reassessment of the emergency evacuation capability, or which adversely affect other aspects of passenger or crew safety in aeroplanes with more than 19 passenger seats.	No	No	Yes, potential impact	No
	(ii) Changes which introduce new cabin layout of a sufficient extent to require a reassessment of the emergency evaluation capability, or which adversely affect other aspects of passenger or crew safety in aeroplanes with 19 or less passenger seats.	No	No	No (unless assessment identifies need for CCD	No
	(iii)Installation of observer seat.	No	No	Yes, potential impact	No
Flight	(i) Software changes that do not affect the pilot interface.	No	No	No	No
	(ii) Software changes that affect the pilot interface.	Yes, potential impact	No	No	No
Systems	(i) Updating the aircraft cockpit voice recorder (CVR) or flight data recorder (FDR) to meet a later standard.	No	No	No	No

Propellers	(i) Changes to: — diameter, — aerofoil, — planform, — material, and — blade retention system.	No	No	No	No
Engines	(i) Power limit change	No	No	No	No
Rotors and drive systems	[Reserved]				
Environment	(i) A change that introduces either an increase in the noise certification level(s) or a reduction in the noise certification level(s) for which the applicant wishes to take credit.	No	No	No	No
Power plant installation	(i) Modifications to the fuel system and tanks (number, size, or configuration)	No	No	No	tbd
Avionics	Comprehensive flight deck upgrade, such as conversion from entirely-federated, independent electromechanical flight instruments to highly-integrated and combined electronic display systems with extensive use of software and/or complex electronic hardware	Yes, potential impact	No	No	tbd

a.To be determined under rulemaking task RMT.0106 (21.039(e)).

(c) Design changes to aircraft for which OSD is not required in accordance with Article 7(a)(2) of Regulation (EU) No 748/2012, as amended by Regulation (EU) No 69/2014, cannot trigger the need to establish OSD.

(d) The OSD constituents SIMD and MCSD were not required to be included in the 'catch-up' OSD in accordance with Article 7(a)(2) of Regulation (EU) No 748/2012, as amended by Regulation (EU) No 69/2014. No design change can trigger the need to add that constituent.

(e) When the design change makes an OSD constituent applicable (see GM No 1 to 21.A.15(d) Clarification of the term 'as applicable') where it was not applicable before, that OSD constituent should be added to the application for the approval of the change to the TC. In accordance with paragraph (e), this does not apply to the OSD constituents SIMD and MCSD.

<ED Decision 2016/007/R new GM>

GM No 2 to 21.A.93(c) Interaction of changes to the type design and changes to MMEL

21.A.93(c

In general, it has to be assumed that changes to the type certificate (TC) that affect the type design can have an effect on the MMEL. Due to its alleviating nature, the MMEL is developed to improve aircraft use, thereby providing a more convenient and economical air transportation for the public. Therefore, not introducing an MMEL relief for new equipment, system or function has no effect on the safe operation. The introduction of an MMEL relief for new equipment can, therefore, be treated as a stand-alone MMEL change, separately from the design change, and can be processed at a later date than the entry into service of the aircraft including the design change. Not modifying an MMEL item whose validity is altered by a type design modification may, however, have an effect on the safe operation. The applicant for a change to the TC that changes the type design should, therefore, identify if this change needs to be supplemented by a change to the MMEL. However, the update of an MMEL relief for an already addressed equipment, system or function can be treated at a later date than the entry into service of the aircraft including the design change, provided that the change to the MMEL is of an alleviating nature. When the change to the MMEL is not of an alleviating nature, it has to be made available according to 21.A.103(a)(4).

It may be assumed that a change to the type design requires a change to the MMEL if any of the following conditions are fulfilled:

(a) the change affects an existing MMEL item in a more restrictive manner: there is a change to equipment, system or function linked to an MMEL item, or a change to the operational limitations and procedures linked to an MMEL item;

(b) the change invalidates the assumptions used to justify an existing MMEL item, and requires a more restrictive MMEL item; and

(c) the change invalidates any dispatch conditions of the MMEL.

Examples of the above three conditions, where no change to the MMEL is required:

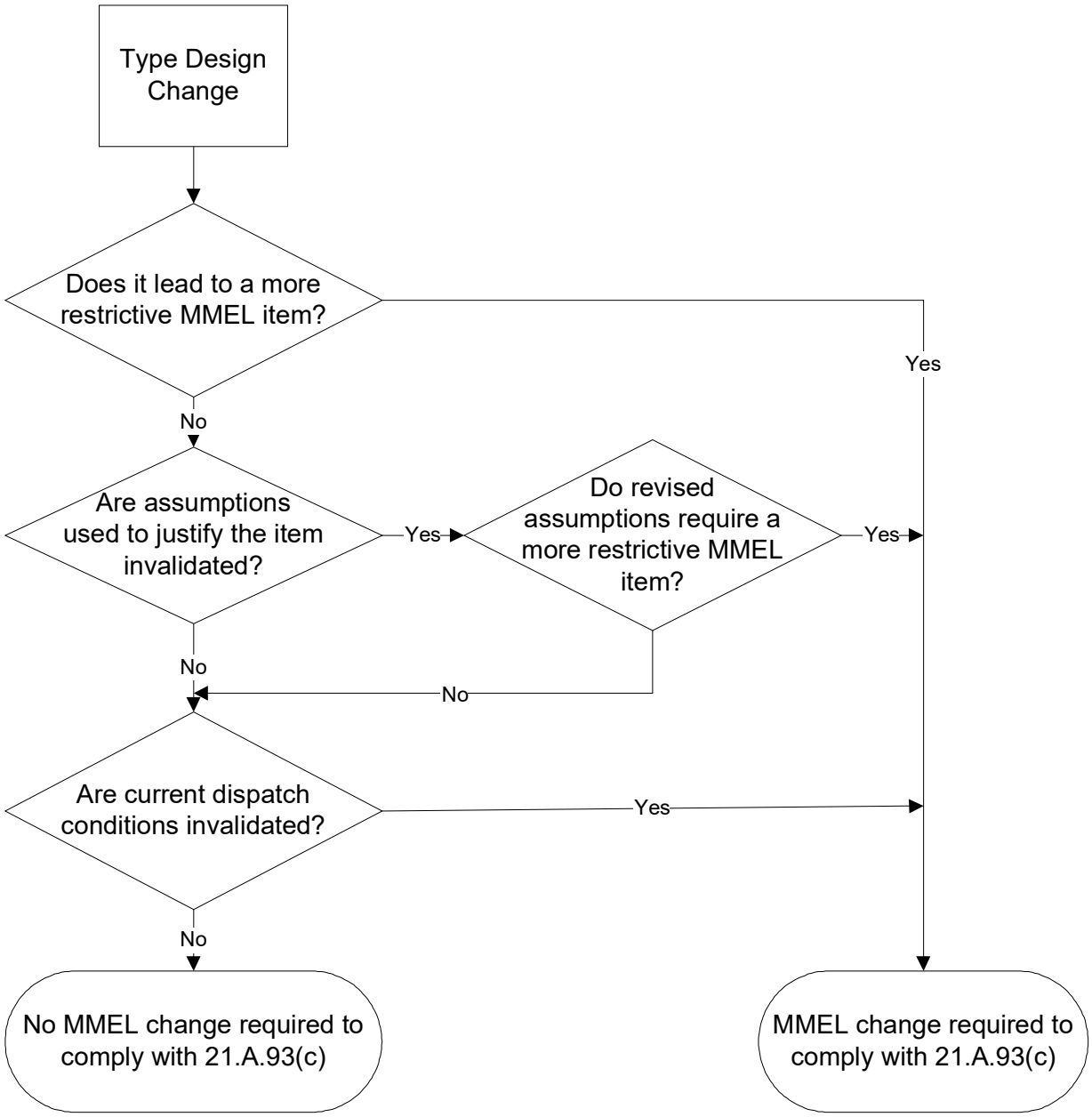
(a) introduction of new equipment, system or function in the type design;

(b) the change has no adverse impact on the qualitative and quantitative assessment used to justify an MMEL item; and

(c) the dispatch conditions do not need to be more restrictive if the current intent of (o) or (m) procedures (as referred in CS MMEL.125) is not impacted.

The following diagram summarises the interaction between type design changes and changes to MMEL (see Figure 1).

Figure 1



<ED Decision 2016/007/R new GM>

AMC 21.A.97 Compliance demonstration process for major changes

21.A.97

1. AMC/GM to 21.A.20 should be used for a major change.

AMC 21.A.20(b) Certification programme
Appendix to AMC 21.A.20(b) - Means of compliance codes
GM 21.A.20(b) Update to the Certification Programme
AMC 21.A.20(c) Compliance documentation
GM 21.A.20(d) Final statement

2. For major changes not requiring long and complex compliance demonstration activities, a certification programme, as described in AMC 21.A.20(b), can be submitted with the application in a simplified format. The certification programme should contain at least the following elements:

- Purpose of change
- Description of change
- Applicability
- Applicable certification specifications, special conditions, equivalent safety findings and environmental protection requirements
- The description on how compliance will be demonstrated, with selected means of compliance (see Appendix to AMC 21.A.20(b) for the codes to be used) and reference to compliance documents
- If relevant, the delivery schedule of compliance documents.

GM 21.A.101 Establishment of the type-certification basis of changed aeronautical products

Foreword

This guidance material (GM) provides guidance for the application of the Changed Product Rule (CPR), 21.A.101 and 21.A.19, for changes made to type-certificated aeronautical products.

Chapter 1. Introduction

1. Purpose

a. The Agency wrote this GM to provide guidance for establishing the type-certification basis for changed aeronautical products in accordance with 21.A.101 and to help identify if it will be necessary to apply for a new type-certificate (TC) under 21.A.19. The guidance describes the process for establishing the type-certification basis for changes to type certificates or restricted type-certificates, supplemental type certificates (STC) and amended STCs, detailing evaluations, classifications, and decisions made throughout the process.

b. The content of this GM is divided into 4 Chapters and 5 Appendices:

(1) Chapter 1 explains the purpose of this GM, describes its content, specifies the intended audience, and clarifies which changes are within the scope of applicability of this GM. Chapter 1 also contains definitions and terminology used in this GM for application of 21.A.101 and 21.A.19.

(2) Chapter 2 provides a general overview of 21.A.101 and 21.A.19, clarifies the principles and safety objectives and directs applicants to the applicable guidance contained in subsequent chapters of this GM.

(3) Chapter 3 contains guidance for implementation of 21.A.101(a) and (b) to establish the type-certification basis for changed aeronautical products. Chapter 3 describes in detail the various steps of the 'top-down' certification basis development approach. Chapter 3 also addresses 21.A.19 considerations to identify conditions under which an applicant for a type design change is required to submit application for a new TC and provides guidance at which stage of the process this assessment is to be performed.

(4) Chapter 4 contains considerations for design related operating requirements, guidance for establishing type-certification basis for changes on certain small aeroplanes and rotorcraft under specified maximum weight ('excepted products'), guidance for use of special conditions under 21.A.101 (d), guidance on the effective period of an application, guidance for establishing the type-certification basis for changes on aircraft designed or modified for a special purpose (to operate under a restricted certificate of airworthiness) and guidance for documentation of revisions to the type-certification basis.

(5) Appendix A contains examples of typical type design changes for small aeroplanes, large aeroplanes, rotorcraft, engines, and propellers which are categorised by the Agency into individual tables according to the classifications to the level of design change - substantial, significant, and not significant.

(6) Appendix B provides detailed guidance with examples for evaluating when compliance would be impractical under the 'impracticality' exception in the rule.

(7) Appendix C provides guidance with examples on use of relevant service experience in the certification process as one way to show that the latest certification specifications may not contribute materially to the level of safety, allowing the use of earlier certification specifications.

(8) Appendix D contains figures and tables considered useful for understanding of the basic terms used and their mutual relations to assist correct application of this GM.

(9) Appendix E contains cross-references to relevant requirements of Part 21 related to application of 21.A.19 and 21.A.101.

c. This GM describes an acceptable means, but not the only means to comply with 21.A.101 and 21.A.19. However, if an applicant chooses to use the means described in this GM, they must follow it entirely.

2. Audience

This GM is for applicants applying for:

- major changes to type design of products under 21.A.97 and to type design of Auxiliary Power Units (APUs) under 21.A.604(b)),
- supplemental type-certificates (STCs) under 21.A.113, or
- major changes to STCs under 21.117 (b). *<propably 21.A.117 (b)>*

3. Applicability

a. Reserved.

b. This GM applies to major type design changes under 21.A.101 for aeronautical products type-certificated, restricted type-certificated, supplemental type-certificated or ETSO approved (APU) under Part 21 (ref. 21.A.21. 21.A.23, 21.A.115, 21.A.604), with application for the type-certification basis of the airworthiness code of the applicable CS (CS-VLA, CS-22, CS-23, CS-25 etc.).

c. Minor type design changes are automatically considered not significant under 21.A.101(b) and the existing type-certification basis is considered adequate for their approval under 21.A.95.

d. Reserved.

e. For the purpose of this GM, the term aeronautical products, or products, means type-certificated or restricted type-certificated aircraft, engines, and propellers or ETSO approved APUs.

f. This GM is not intended to be used to determine the applicable environmental protection requirements (aircraft noise, fuel venting and exhaust emission requirements) for changed products.

4. Definitions and Terminology

Adequate Type-certification Basis - The type-certification basis for a changed product under 21.A.101 is considered adequate when the Agency determines that it provides adequate standards for the design change, i.e. when the certification specifications of the applicable airworthiness code and prescribed special conditions provide an appropriate level of safety for the changed product and do not result in any unsafe design features.

Aeronautical product - The terms aeronautical product or product(s) used in this guidance material include type-certificated or restricted type-certificated aircraft, engines, propellers and ETSO approved Auxiliary Power Units (APUs).

Affected area, system, part or appliance - any system, part, or appliance which is either physically altered by a proposed design change or, even if not altered physically, its functional characteristics are altered due to the effects of the physical change.

Design change - A change in the type design of an aeronautical product. In the context of this document the terms 'change', 'design change' and 'type design change' are synonymous.

Earlier certification specifications - The certification specifications of the applicable airworthiness code in effect prior to the date of application for the change, but not prior to the existing type-certification basis.

Existing type-certification basis - The certification specifications of the applicable airworthiness code, special conditions and equivalent level of safety findings incorporated by reference in the type-certificate of the product to be changed.

Latest certification specifications - The certification specifications of the applicable airworthiness code in effect on the date of application for the change.
Previous relevant design changes - Previous design changes, the cumulative effect of which could result in a product significantly or substantially different from the original product or model, when considered from the last time the latest certification specifications were applied.
Product level change - A change or combination of changes that makes the product distinct from other models of the product (for example, range, payload, speed, design philosophy).
Product level change is defined at the aircraft, engine, propeller, or APU level of change. Secondary change - A change is a secondary change if compliance to the latest amendment would not contribute materially to the level of safety and where it is part of and consequential to an overall significant change. A secondary change is a physical change that restores without changing the system, structural capacity, or functionality, but is necessary to support a significant change.
Significant change - A change to the type-certificate significant to the extent that it changes at the product level one or more of the following: general configuration, principles of construction, or the assumptions used for certification, but not to the extent to be considered a substantial change. The significance of the change must be considered in the context of all previous relevant design changes and all related revisions to the certification specifications of the applicable airworthiness code. Not all product level changes are significant.
Significant change in an area (for excepted aircraft under 21.A.101(c) only) - A change in an area is significant if the general configuration or the principles of construction in that area are not retained, or the assumptions used for certification of that area do not remain valid. Substantial change - A change which is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required, and consequently a new type certificate, in accordance with 21.A.19.
Type-certification basis - The certification specifications of the applicable airworthiness code as established in 21.A.17 and 21.A.101, as appropriate; special conditions; and equivalent level of safety findings applicable to the product to be certificated.

Chapter 2. Overview of 21.A.19 and 21.A.101

1. 21.A.19
   a. 21.A.19 requires an applicant to obtain a new type-certificate (TC) for a changed product if the change in design, power, thrust, or weight is found by the Agency so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
   b. Changes that require a substantial re-evaluation of the product's compliance findings are referred to as 'substantial changes'. For guidance, see Section 3 of Chapter 3. Appendix A to this GM provides examples of type design changes that will require application for a new TC.
   c. If the Agency has determined through 21.A.19 that the proposed design change does not require a new TC, see 21.A.101 for the applicable implementing rules to establish the type-certification basis for the proposed design change. For guidance, see Chapter 3 and the examples in Appendix A of this GM.
2. 21.A.101
   a. 21.A.101(a) requires a change to a TC to comply with the certification specifications of the airworthiness code that is applicable to the changed product and that is in effect at the date of the application for the change, unless the change meets the criteria for the exceptions identified in 21.A.101(b) and (c)) or compliance with certification specifications of later effective amendments is chosen by the applicant or required under 21.A.101(e) and (f). The intent of 21.A.101 is to enhance safety through the incorporation of the latest regulatory standards in the type-certification basis for changed products to the greatest extent practicable.
   b. An applicant can comply with certification specifications of an earlier amendment of the airworthiness code consistent with the requirements of 21.A.101(b), when:
      - a change is not significant (see 21.A.101(b)(1)), or
      - an area, system, part or appliance is not affected by the change (see 21.A.101 (b) (2)), or
      - compliance with the latest amendment for a significant change does not contribute materially to the level of safety (see 21.A.101(b)(3)), or
      - compliance with the latest amendment would be impractical (see 21.A.101(b)(3)).

c. Note that earlier amendments may not precede the corresponding amendment of the airworthiness code incorporated by reference in the type-certificate.

d. 21.A.101(b) allows a changed product to comply with an earlier amendment of the applicable airworthiness code, provided one of the criteria in 21.A.101(b)(1), (2) or (3) are met and the earlier amendment is considered adequate. However, when a proposed design change involves features or characteristics considered novel or unusual, or the intended use of the changed product is unconventional, or experience from other similar products in service or products having similar design features has shown that unsafe conditions may develop, and the proposed certification specifications do not contain adequate or appropriate standards for the changed product, later amendments and/or special conditions will be applied.

e. 21.A.101(b)(1)(i) and (ii) describe the automatic criteria establishing that a change is significant.

f. 21.A.101(c) provides an exception from the requirements of 21.A.101(a) for a change to certain aircraft with less than specified maximum weight. If an applicant applies for a type design change to an aircraft (other than rotorcraft) of 2 722 kg (6 000 pounds) or less maximum weight, or to a non-turbine powered rotorcraft of 1 361 kg (3 000 pounds) or less maximum weight, the applicant can demonstrate that the changed product complies with the type-certification basis incorporated by reference in the TC. The applicant can also elect to comply, or may be required to comply, with a later amendment. See Chapter 4, Section 2 in this GM for specific guidance on this provision.

g. 21.A.101(d) provides for the use of special conditions, under 21.A.16B, when the proposed amendment of the applicable airworthiness code and any later amendment do not provide adequate standards to the proposed change.

h. 21.A.101(e) prescribes the effective period an application will remain valid for a change. This section is consistent with the requirements of 21.17 for a new TC.

i. 21.A.101(f) requires that if an applicant chooses (elects) to comply with a certification specification of an amendment to the airworthiness codes that is effective after the filing of the application for a change to a type, the applicant shall also comply with any other certification specification that the Agency finds is directly related.

Chapter 3. The process for establishing the type-certification basis for changed products 21.A.101 (a) and (b)

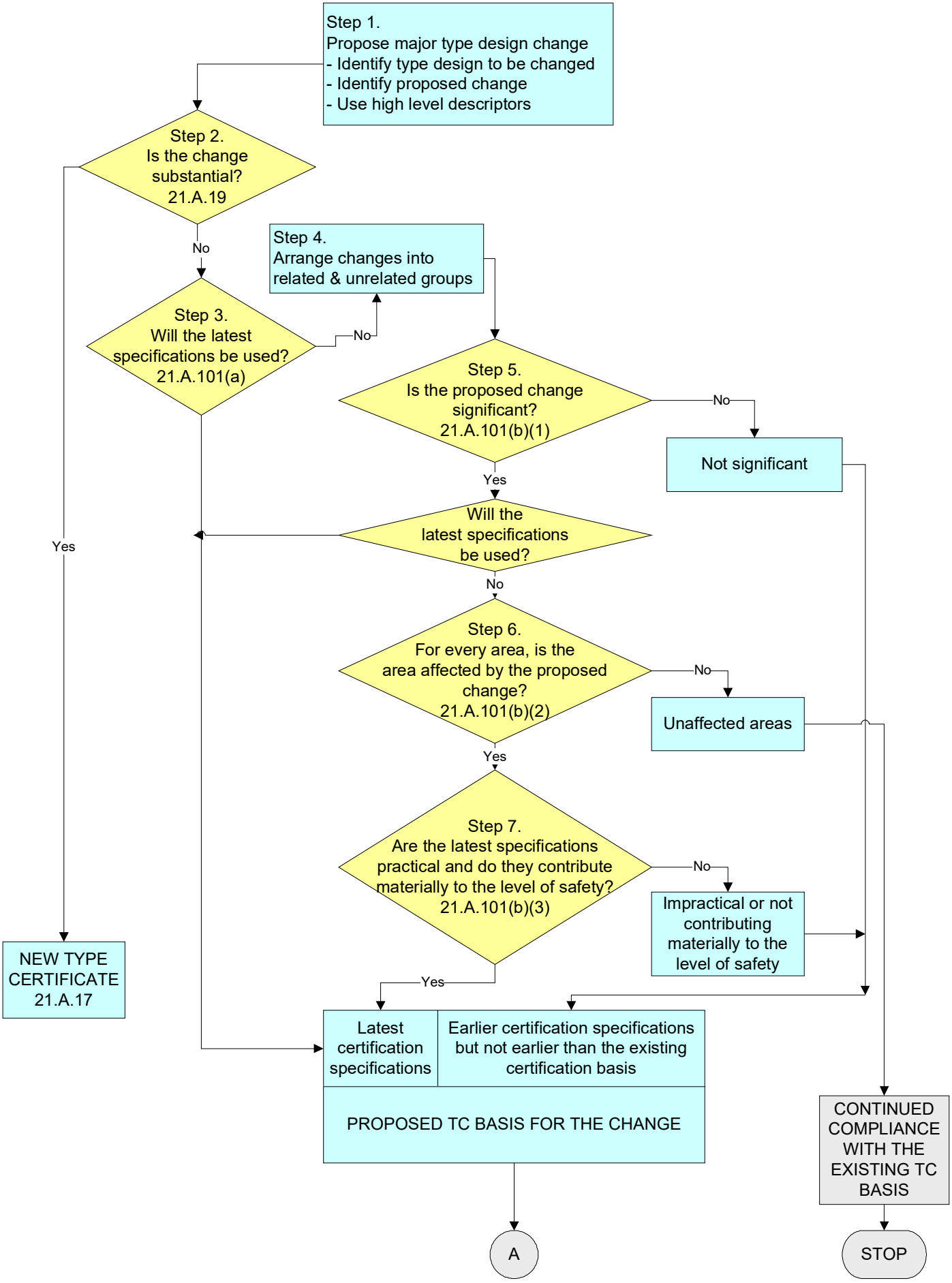
1. Overview

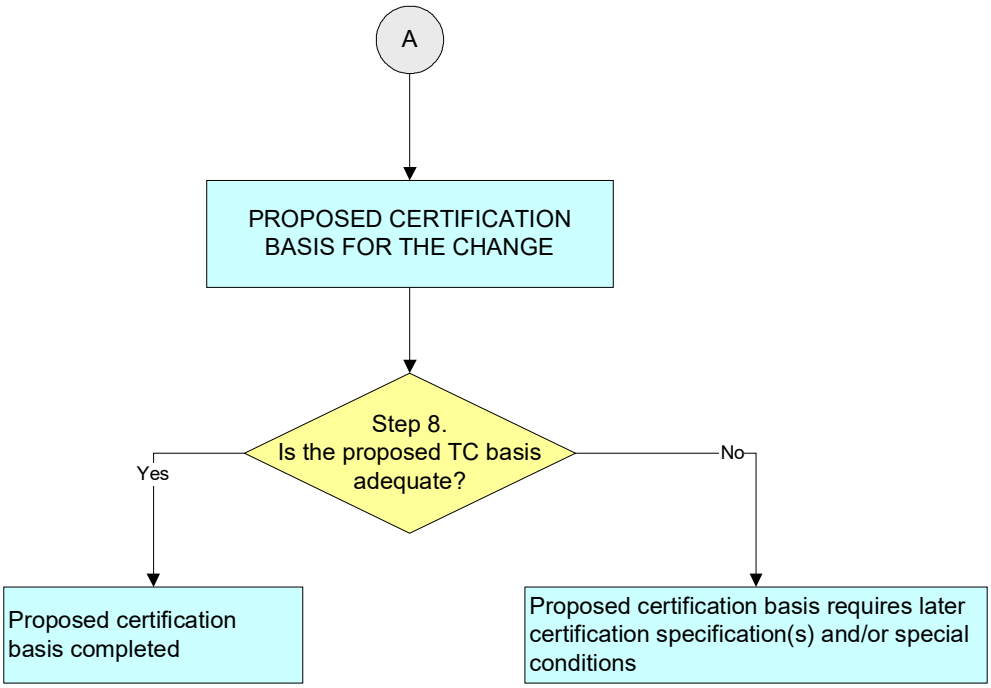
a. Both the applicant and the Agency have responsibility under 21.A.101(a) and (b). The applicant must demonstrate that the change complies with the latest applicable certification specifications unless use of an exception per 21.A.101(b) is justified. If an exception is proposed, the applicant should make a preliminary classification whether the change is significant or not significant, and propose an appropriate type-certification basis. The Agency determines whether the applicant's classification of the change and proposal for the type-certification basis are consistent with the applicable rules and their interpretation, but should not be dependent on whether the TC holder or applicant for a STC is originating the change. The type-certification basis can vary depending on the magnitude and scope of the change. The steps below present a streamlined approach for making this determination. In addition to assisting in the determination of significance and establishing the type-certification basis, this guidance will help to establish the appropriate amount of coordination required between the applicant and the Agency.

b. Classifications of typical type design changes are in Appendix A, Classification of Changes. See paragraph 6(c) of this chapter for instructions on how to use Appendix A.

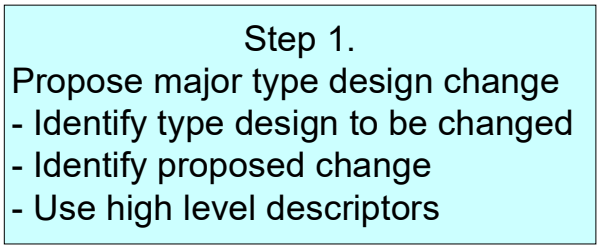
c. In cases where the examples in Appendix A are not applicable for the proposed change, use the following steps in conjunction with Figure 1 on the next page to establish the appropriate type-certification basis for the type design change.

Figure 1. Establishing the type-certification basis for a changed product





2. Step 1 of Figure 1. Identify the proposed type design change to an aeronautical product



a. Prior to describing the proposed change(s), it is important to clearly identify the type design configuration to be changed. A series of derivative aircraft, engines, or propellers (for example, x-100, x-200, x-300) may evolve based on predecessor type designs, each with its own design changes that make it distinct from the other series. The applicant should identify which model or series within that model is the specific configuration that will be modified.

Note: An STC is not a product; it is a change to a product. When changing or amending an STC the starting point is the existing modified product (TC with existing STC installed). For example, if an applicant were amending an STC for an external cargo locker and the applicant proposed changing the configuration of the locker, then the starting point would be the existing TC with the existing STC installed. The applicant would then compare that configuration (TC with existing STC installed) to the changed product (TC with proposed amended STC installed).

b. Changes to a product can include physical design changes, changes to an operating envelope and/or performance changes. The change can be a single change or a collection of changes. The purpose of this process step is to identify and describe the change to the aeronautical product. The applicant for a type design change should consider all previous related design changes and the amendment level of the type-certification basis for these changes.

Note 1: By definition all previously incorporated changes have been approved. The purpose of step 1 is to consider the net cumulative effect of the changes since the last time the certification basis for the changed/affected area was upgraded from that of the original type design.

Note 2: Substantiating data for the proposed type design change can include compliance findings from a previously approved design change, in supporting compliance findings for the proposed change. However, for the purpose of classifying the proposed design change, such previously approved design and compliance data should be now considered in relation to the proposed type design change and should be taken into account as a part of the proposed design change

classification.

c. When identifying the changes being proposed as part of a modification, consider previous relevant changes that create a cumulative effect, as these may influence the decisions regarding substantial and significant changes later in the process. By previous relevant changes those design changes are meant whose effects accumulate, such as successive thrust increases, incremental weight increases, or sectional increases in fuselage length. Any previous relevant design changes in the area affected by the current change that did not involve an upgrade of the existing type-certification basis should be taken into account in the next design change proposal.

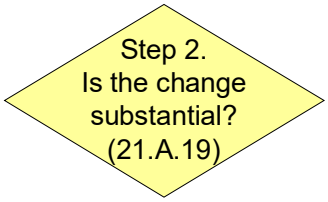
(1) Example 1: A 5 % weight increase is currently being proposed, but a previous 10 % and another 15 % weight increase has been incorporated into this aircraft without upgrading the existing type-certification basis. In the current proposal for a 5 % weight increase, the cumulative effects of the two previous weight increases that did not involve upgrade of the type-certification basis will now be accounted for as an approximately 30 % increase in weight, for the purpose of making the substantial and/or significant decisions. Note that the cumulative effects to be considered are only those incremental increases from the last time the applicable certification specifications in the type-certification basis were upgraded.

(2) Example 2: The TC for aeroplane model X lists three series, namely X-300, X-200, and X-100. The X-300 is a derivative of the X-200 which is a derivative of the original X-100 series. An applicant proposes a design change to the X-300 series aeroplane. During the review of the X-300 type-certification basis and the certification specifications affected by the proposed change, it was identified that one certification specification, CS-25.571 (damage tolerance), remained at the same amendment level as the X-100 original type-certification basis (derogation from 21.A.101(a) was allowed). Since the amendment level for this particular certification specification was not changed for the two subsequent aeroplane series (X-200 and X-300), the cumulative effects of these two previous design changes that are related to the proposed change and the damage tolerance requirements should now be addressed.

d. To identify and describe the proposed changes to any aeronautical product, use a high-level description of the design change that characterises the intent of, or the reason for, the change. No complex technical details are necessary at this stage. For example, a proposal to increase maximum passenger-carrying capacity may require an addition of a fuselage plug, and as such a 'fuselage plug' becomes one possible high-level description of this design change. Similarly, a thrust increase, a complete new interior, an avionics system upgrade, or a passenger-to-cargo conversion are all high-level descriptions that characterise typical changes to the aircraft, each driven by a specific goal, objective or purpose.

e. Evolutionary Changes. Evolutionary changes that occur during the course of a certification programme may require re-evaluation of the type-certification basis and may result in re-classification of the change. That is, any evolution in the proposed design change after the type-certification basis has been agreed to (or established) will necessitate a revisit of the type-certification basis to ensure that 'evolved' aspects of the design change are still covered by the agreed upon certification basis.

3. Step 2 of Figure 1. Is the change substantial?



a. 21.A.19 requires an applicant to apply for a new TC for a changed product if the proposed change in design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required. A new TC could be required for either an extensive change to a previously type-certificated product or for a changed design derived through the cumulative effect of a series of design changes from a previously type-certificated product.

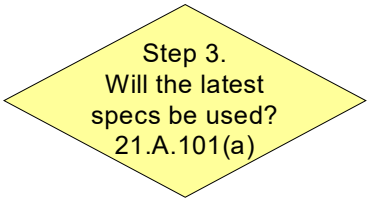
b. A 'substantially complete investigation' of compliance is required when most of the existing substantiation is not applicable to the changed product. A substantial change proposal will require the need to comply with all the certification specifications applicable to a particular category of product. The number of certification

specifications to which compliance must be re-established for the changed product may not necessarily be the sole determination criteria as to whether the change is substantial, but rather the extent of effort to establish compliance, or the depth of investigation required to be done. In other words, the design change may be considered substantial if it is so extensive (making the product sufficiently different from its predecessor) that the design models, methodologies and approaches used to demonstrate a previous compliance finding could not be used.

c. To address the question if a change is substantial at the beginning of the process, the applicant should evaluate the total or combined effect of all the proposed changes identified in Step 1, including the cumulative effects of previous relevant design changes since the last update of the type-certification basis (as explained in Step 1).

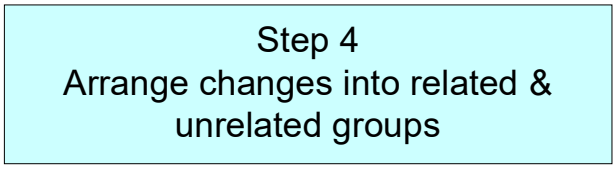
d. If it is not initially clear that a new TC is required, Appendix A provides some examples of substantial changes to aid in this classification. A substantial change requires application for a new TC under 21.A.17 and 21.A.19. If the change is not substantial, then follow the 21.A.101 process.

4. Step 3 of Figure 1. Will the latest certification specifications be used?



a. The applicant can upfront elect to use the latest certification specifications for their proposed type design change. If the latest certification specifications are used, the applicant will meet the intent of 21.A.101 and no further classification (significant or not significant) and justification is needed. However, the decision to voluntarily comply with the latest certification specifications for a design change sets a new regulatory baseline for all future related changes in the same affected area. Even though one applicant elects to use the latest certification specifications, another applicant could apply 21.A.101 for a similar design change proposal, and use the exceptions in accordance with 21.A.101(b). If the latest certification specifications are not used, then proceed as follows:

5. Step 4 of Figure 1. Relation of changes



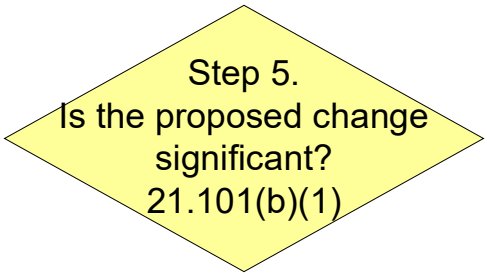
a. Once the proposed changes are identified using high-level descriptions, the next step is to determine if any of these changes are related to each other. Related changes are those that cannot exist without one another, are co-dependent, or a prerequisite of one another. For example, a need to carry more passengers could require the addition of a fuselage plug, which will result in a weight increase, and may necessitate a thrust increase. Thus the fuselage plug, weight increase and thrust increase are all related high-level changes that will be needed to achieve the goal of carrying more passengers. A decision to upgrade the cockpit to more modern avionics at the same time as these other design changes may be considered unrelated, as the avionics upgrade is not necessarily needed to carry more passengers (it has a separate purpose, likely just modernisation). The proposed avionics upgrade would then be considered an unrelated (or a stand-alone) change. However, the simultaneous introduction of a complete new interior may be considered related since a cabin length change will have an impact on occupant safety considerations. Even if a new cabin interior is not included in the product level change, the functional effect of the fuselage plug has implications on occupant safety (e.g., the dynamic environment in an emergency landing, emergency evacuation, etc.), and thus the cabin interior becomes an affected area.

b. Once the change(s) are organised into groupings of those that are related and those that are unrelated (or stand-alone), the applicant is ready for Step 5 of Figure 1. The grouping of related and unrelated changes is

particularly relevant to the 'significant' Yes/No decision, (21.A.101(b)(1)), described in Step 5 of Figure 1. Each group of related changes and each unrelated (stand-alone) change is evaluated on its own merit for significance.

c. After describing the groupings and the associated or supporting technical details for each change, the applicant should identify areas, systems, parts or appliances of the product that are affected by the design change and the corresponding certification specifications associated with these areas. For each group, the applicant should assess the physical and/or functional effects of the change on other areas, systems, parts, or appliances of the product. The characteristics affected by the change are not only physical changes, but also functional changes brought about by the physical changes. Examples of physical aspects are: structures, systems, parts and appliances, software in combination with the affected hardware. Examples of functional characteristics are performance, handling qualities, aeroelastic characteristics, and emergency egress. The intent is to encompass all aspects where there is a need for re-evaluation, that is, where the substantiation presented for the product being changed should be updated or rewritten.

6. Step 5 of Figure 1. Is the proposed change significant?



a. In Step 5 it is the applicant's responsibility to justify that a grouping of related changes or an unrelated change does not qualify as a significant change. Significant changes are product level changes which are distinct from the vast majority of major changes. In general, these changes are either the result of an accumulation of changes or occur through an isolated extensive change that makes the changed product distinct from its predecessors. Step 1 explains the accumulation of changes that should be considered.
21.A.101(b)(1) defines a significant change as existing when one or more of three automatic criteria apply:

(1) Changes where the general configuration is not retained (significant change to general configuration). A change to the general configuration at the product level that distinguishes the resulting product from other product models, for example performance or interchangeability of major components. Typically, for these changes an applicant will designate a new aircraft model number, although this is not required. For examples, see Appendix A to this GM.

(2) Changes where the principles of construction are not retained (significant change to principles of construction). A change at the product level to the materials and/or construction methods that affect the overall products' operating characteristics or inherent strength and would require extensive reinvestigation to demonstrate compliance. For examples, see Appendix A to this GM.

(3) Changes that invalidate the assumptions used for certification (significant change to the assumptions used for certification). A change to the assumptions at the product level associated with the compliance demonstration, performance or operating envelope that by itself is so different that the original assumptions or methodologies of demonstrating compliance are invalidated. For examples, see Appendix A to this GM.

Note: The word 'assumptions' in 21.A.101 bears a meaning different from CS E-30 and CS-P-30. CS-E and CS-P address the conditions that may be imposed on the engine or propeller when it is eventually installed in the aircraft and are published in the installation manual.

b. The above criteria are used to determine if each change grouping and each stand-alone change is significant. These three criteria are assessed at the product level. In applying the automatic criteria the applicant should focus on the design change itself. Consideration of only the regulatory importance or safety benefit of the latest certification specifications is not a justification by itself to cause a design change to be classified or reclassified as a significant change.

c. Appendix A includes tables of typical changes for large aeroplanes, small aeroplanes, rotorcraft, and engines/propellers that meet the definition of significant. The appendix also includes typical changes that do not achieve the significant level. In these tables, one or more of the three automatic criteria in 21.A.101(b)(1) apply for each case where the changes are identified as significant. Experience has shown the concept of having only the three automatic criteria seems to fit most projects. The tables can be used in one of two ways:
   (1) To classify a proposed change that is listed in the table, or
   (2) In conjunction with the three automatic criteria, to help classify a proposed change not listed in the tables of the appendix by comparing the proposed change to changes which are similar in type and/or magnitude.

d. Design changes can trigger one or more of the automatic criteria listed in 21.A.101(b)(1)(i) and (ii) for the proposed design change. When assessing the design change grouping, consider the cumulative effect of previous relevant design changes. Design changes may have been incorporated over time with no change in the type-certification basis and the final product may be significantly different than would be represented by the existing type-certification basis.

e. Each grouping of related changes and each unrelated (stand-alone) change, identified using high-level descriptions, will be evaluated to determine if it is a significant or not significant change. Use the tables in Appendix A as guidance to make the classification of significant or not significant. Only when one or more of the three criteria is met, the type design change can be considered significant for that grouping or unrelated change. The starting point for assessing the cumulative effects of previous relevant design changes is from the last time the applicable certification specifications in the type-certification basis for the affected area, system, part, or appliance were upgraded.

f. Typically, a change to a single area, system, part or appliance may not result in a product level change. However, there may be distinct cases where the change to a single system or part may, in fact, result in a significant change due to its effect on the product overall. Examples may include addition of winglets, leading edge slats or change in primary flight controls to fly-by-wire system.

g. A change is a secondary change if compliance to the latest amendment does not contribute materially to the level of safety and where it is part of and consequential to an overall significant change. A secondary change is a physical change that restores without changing the system, structural capacity or functionality, but is necessary to support a significant change. Based on this description, a secondary change is not required to comply with the latest certification specifications because it is considered 'not contributing materially to the level of safety', and therefore eligible for an exception under 21.A.101(b)(3). Determining whether a change meets the description for secondary change, and thus is eligible for an exception, should be straightforward. Hence the substantiation or justification need only be minimal. If this determination is not straightforward, then the proposed change is very likely not a secondary change.
   (1) In some cases the change which restores functionality may in fact contribute materially to the level of safety by meeting a later amendment. If this is the case, it would not be considered a secondary change.
   (2) An example of secondary change is lengthening existing control cables passing through the new fuselage plug to restore existing functions to systems that could be situated within or beyond the new plug. The lengthening of these cables can be accepted as not adding system capacity or capability, so these changes can be identified as secondary changes and not be required to meet the latest amendment.

h. A new model number designation to a changed product is not necessarily indicative that the design change is significant under 21.A.101. Conversely, retaining the existing model designation does not mean that the design change is not significant. All changes are considered in light of the magnitude of the type design change.

i. Making the determination. The final determination of whether a design change is significant or not significant is retained by the Agency. To assist the applicant in their assessment, the Agency has predetermined the classification of several typical design changes that can be used for reference, and these examples are listed in Appendix A to this GM.

j. At this point, the determination of significant or not significant for each of the groupings of related changes and each stand-alone change has been made. For significant changes, if the applicant proposes to comply with an earlier requirement, the procedure outlined in paragraph 7 below should be used.

7. Proposing an amendment level for a significant change

a. If an unrelated (stand-alone) change or a grouping of related changes is classified as significant, the applicant will comply with certification specifications of the latest amendment of the applicable airworthiness code for certification of the changed product, unless the applicant can justify use of one of the exceptions provided in 21.A.101(b)(2) and/or (3) to demonstrate compliance with earlier amendment(s). The final type-certification basis may consist of a combination of certification specifications of the applicable airworthiness code at different amendment levels ranging from the original type-certification basis to the most current amendments.

b. If the classification of the change is significant, all areas, systems, parts or appliances affected by the change must comply with certification specifications of the applicable airworthiness code at the amendment level in effect on the date of application for the change. The applicant will need to show that an area, system, part or appliance is not affected by the change to justify use of the exception in 21.A.101(b)(2) (see Section 9 for guidance on whether or not an area is affected by the proposed change).

c. Reserved.

d. 21.A.101(b)(3) provides two more exceptions applicable to areas, systems, parts or appliances which are affected by the significant change but for which compliance with the latest certification specifications would either not contribute materially to the level of safety or would be impractical (see Section 10 for more guidance).

e. Reserved.

f. The applicant should provide acceptable justification for the application of earlier amendments for areas affected by a significant change. Your justification should show that compliance with later amendment in these areas would not contribute materially to the level of safety or would be impractical. Such justification should address all the aspects of the area, system, part or appliance affected by the significant change.

g. The final type-certification basis may combine certification specifications at the latest amendment level, earlier (intermediate) amendment levels, and the amendment level of the existing type-certification basis, but cannot contain certification specifications preceding the existing type-certification basis.

h. Note that should an applicant decide to use the latest certification specifications without any exceptions, no further evaluations and justifications are needed. In such a case, proceed to step 8 (Section 11).

8. Proposing an amendment level for a not significant change

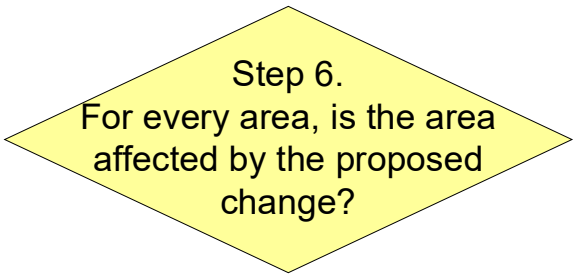
a. When a change is classified not significant, the rule (21.A.101(b)(1)) allows the use of the earlier certification specifications, but not dated prior to the existing type-certification basis. Within this limit, the applicant is allowed to propose an amendment level for each certification specification for the affected area. However, the applicant should be aware that their proposal for the type-certification basis will be reviewed by the Agency to ensure that the type-certification basis is adequate for the proposed change (see paragraph 8.d).

b. Reserved

c. When choosing the above option of the existing type-certification basis, an applicant can elect to comply with a specific certification specification or a subset of certification specifications at later amendments. In such a case, the applicant should consult with the Agency to ensure the type-certification basis includes other certification specifications that are directly related. Some later certification specifications may be less restrictive; therefore, the applicant may see advantage in using them on the elect to comply basis. However, the applicant is recommended not to make a final decision until they have learned from the Agency which other certification specifications are considered directly related.

d. For a design change that contains features which are not covered in the proposed type-certification basis, i.e. when the type-certification basis is not considered 'adequate' (see the definition of 'adequate type-certification basis' in Chapter 1, Section 4), the Agency will designate the applicable certification specifications at the appropriate amendment level, beginning with the existing type certification basis and progressing to the most appropriate later amendment level for the change. For a change that contains new design features that are novel or unusual, for which there is no later applicable certification specification, the Agency will designate special conditions.

9. Step 6 of Figure 1. Is the area affected by the proposed change?



a. An unaffected area is any area, system, part, or appliance that is not affected by the proposed type design change. For a type design change, it is important that the effects of such change on other areas, systems, parts, or appliances of the product are properly assessed because areas that have not been physically changed may still be considered part of the affected area. If a new compliance finding is required, regardless of its amendment level, it is an affected area. If the significant change does not affect the area, then the type-certification basis of that area does not need to be revisited, in other words, the unaffected area continues to comply with the existing amendment level without further substantiation.

b. To determine whether an area is affected or not, consider the following aspects of a type design change:

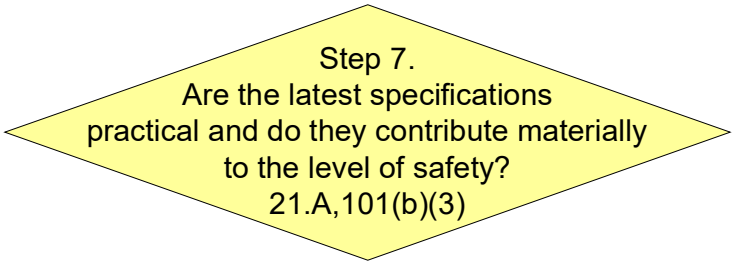
(1) Physical aspects. The physical aspects include direct changes to structures, systems, parts, and appliances (physical aspects may include software/airborne electronic hardware changes and the resulting effect on systems functions).

(2) Performance/functional characteristics. The less obvious aspect of the word 'areas' covers general characteristics of the type-certificated product, such as performance features, handling qualities, emergency egress, structural integrity, aeroelastic characteristics, or crashworthiness. These characteristics may be affected by a product level change. For example, adding a fuselage plug could affect performance and handling qualities, and thus specifications associated with these aspects would be considered part of the affected area. Another example is the addition of a fuel tank and new fuel conditioning unit. This change affects the fuel transfer and fuel quantity indication system resulting in the aeroplane's unchanged fuel tanks being affected. Thus, the entire fuel system (changed and unchanged areas) becomes part of the affected area due to the change in functional characteristics.

Note: Substantiating data for the affected area for a proposed type design change can include compliance findings from a previously approved design change, in supporting compliance findings for your proposal. However, your proposal to use previously approved compliance data must be considered part of the entire proposed type design change and should be approved as part of your proposed design change.

c. All areas affected by the proposed design change must comply with the latest certification specifications, unless the applicant can show that demonstrating compliance with the latest amendment of a certification specification would not contribute to the level of safety or would be impractical. Step 7 provides further explanation.

10. Step 7 of Figure 1. Are the latest certification specifications practical and do they contribute materially to the level of safety?



a. Contribute materially to the level of safety. Compliance with the latest certification specifications could be considered not to contribute materially to the level of safety if the existing type design and/or relevant experience demonstrates a level of safety comparable to that provided by the latest certification specifications. The

applicant should provide sufficient justification to allow the Agency to make this determination. This exception could be applicable in the situations described in the paragraphs below:

Note: Compliance with later certification specifications would not be required where the amendment is of administrative nature and has been made only to correct inconsequential errors or omissions, consolidate text, or clarify an existing certification specification.

(1) Design features that exceed the existing type-certification basis specifications, but do not meet the latest certification specifications, can be used as a basis for granting an exception under the 'does not contribute materially' exception. These design features, if accepted as a justification for an exception, must be incorporated in the amended type design configuration and recorded in the TCDS or STC, where necessary, as an integral part of the type-certification basis. For example[1] , an applicant proposes to install winglets on a Part-25 airplane. Part of the design involves adding a small number of new wing fuel tank fasteners. The latest § 25.981 at amendment 25-102 requires structural lightning protection. The applicant proposes an exception from these latest structural lightning protection certification specifications because the design change uses new wing fuel tank fasteners with cap seals installed. The cap seal is a design feature that exceeds the requirement of § 25.981 at a previous amendment level, but does not meet the latest amendment 25-102. If the applicant can successfully substantiate that compliance with amendment 25-102 would not materially increase the level of safety of the changed product, then this design feature can be accepted as an exception to compliance with the latest amendment.

(2) Consistency of design should be considered when applying the latest certification specifications. Below, an aeroplane example is provided for describing how this provision may be used; however, the rationale in this example may be applied to any product covered by this GM.

- For example, when a small fuselage plug is added, additional seats and overhead bins are likely to be installed, and the lower cargo hold extended. These components may be identical to the existing components. The level of safety may not materially increase by applying the latest certification specifications.
- However, if a fuselage plug is large enough in relation to the original certificated aircraft structure, seats, bins, doors, and cargo compartment, the change may require compliance with the latest certification specifications, comparable with what will be required for a new aeroplane. In these circumstances the proposed type-certification basis should encompass the certification specifications in effect on the date of application for the change.

(3) Service experience: Relevant service experience, such as fleet performance or utilisation over time (relevant flight hours or cycles), is one way of showing that a later amendment may not contribute materially to the level of safety, so the use of earlier certification specifications could be appropriate. Appendix C provides additional guidance on the use of service experience, along with examples.

- There may be cases for rotorcraft and small aeroplanes where relevant data may not be sufficient or not available at all because of the reduced utilisation and the different amount and type of data available. In such cases, other service history information may provide sufficient data to justify the use of earlier certification specifications, such as: warranty, repair, and parts usage data; accident, incident, and service difficulty reports; Service Bulletins; airworthiness directives; or other pertinent and sufficient data collected by the manufacturers, authorities, or other entities.
- The service experience levels necessary to demonstrate the appropriate level of safety as they relate to the proposed design change would have to be reviewed and agreed to by the Agency.

b. Impractical. Compliance with the latest certification specifications may be considered impractical if the applicant can justify that it would result in additional resource requirements that are not commensurate with the incremental safety benefit (difference between the latest and the proposed type-certification basis). The additional resource requirements could include those arising from design changes required for compliance and the effort required to demonstrate compliance, but excludes resource expenditures for prior product changes.

(1) The position that compliance is impractical should be supported with a substantiating data and analyses. While evaluating the applicant's position and their substantiating data regarding impracticality, the

1.This example is taken from the FAA experience gained prior to the Agency's start, therefore the references to the FAA sections and amendments are kept.

Agency may consider other factors (for example, the costs and safety benefits for a comparable new design).

(2) A review of large aeroplane projects showed that in certain cases, where an earlier amendment to applicable certification specifications was allowed, design changes were made to nearly comply with the latest amendments. In these cases, the applicants were able to successfully demonstrate that full compliance would require a substantial increase in the outlay or expenditure of resources with a very small increase in the level of safety. These design features can be used as a basis for granting an exception under the 'impracticality' exception.

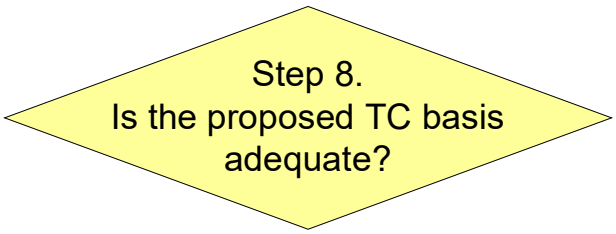
(3) Appendix B provides additional guidance and examples for determining procedures for evaluating impracticality of applying latest certification specifications to a changed product rule.

(a) The exception of impracticality is a qualitative and/or quantitative cost/safety benefit assessment for which it is difficult to specify clear criteria. Experience to date with applicants has shown that justification of impracticality is more feasible when both applicant and authority agree at an earlier discussion that the effort (in terms of cost, changes in manufacturing, etc.), required to comply would not be commensurate with a small incremental safety gain. This would be clear even without the need to perform any detailed cost/safety benefit analysis (although cost analysis could always be used to support an appropriate amendment level).

Note: The impractical exception should not be based on the size of the applicant's company or their financial resources. Costs to comply with a later amendment should be evaluated against the safety benefit of complying with the later amendment. Applicants that may not be able to afford the cost because of reasons such as fewer resources, will not be granted the impractical exception when the cost is comparable to the safety benefit achieved by complying with a later amendment.

(b) For example, a complex redesign of an area of the baseline aircraft may be required to comply with a new certification specification, and that redesign may make the changed product uncommon with respect to design and manufacturing processes from the existing family of derivatives. Relevant service experience of the existing fleet of the baseline aircraft family would be required to show that there has not been a history of problems associated with the hazard that the new amendment in question was meant to address. In this way, the incremental cost/impact to the applicant is onerous and the incremental safety benefit that would be realised by complying with the later amendment would be minimal, and this would be justified with a demonstrated acceptable service experience in relation to the hazard that the new certification specification addresses.

11. Step 8 of Figure 1. Is the proposed type-certification basis adequate?



a. Regardless of whether the change is significant or not, the applicant's proposed type- certification basis may be deemed inadequate - that is, the change includes features or characteristics that were not foreseen during the initial (or previously approved) type- certification. These features or characteristics, if not adequately addressed, may make the product unsafe for the uses for which certification is requested. This would obstruct issuance of the requested approval for the change. The change must comply with later standards (such as, a later amendment or a special condition). An example is adding a flight critical system such as an electronic air data display on CS-25 aeroplane whose existing type-certification basis did not have lightning protection certification specifications. In this case, compliance with the certification specification for lightning protection will be required, even though this is not a significant change.

b. In cases where inadequate or no certification specifications exist for the change in the proposed type-certification basis, but adequate standards exist in a subsequent amendment of the applicable airworthiness code, the subsequent amendment will be made part of the type-certification basis to assure its adequacy.

c. In cases where no adequate standard exists in any subsequent amendment of the applicable airworthiness code because of one or more reasons specified in 21.A.16B(a), the Agency will prescribe special conditions containing necessary safety standard per 21.A.16B(b). 21.A.101(d) allows for the application of special conditions, or for changes to the existing special conditions, to address the changed designs where the proposed type-certification basis does not provide adequate standards with respect to the proposed change. Reference Section 3 of Chapter 4 for additional information pertaining to special conditions.

d. Reserved

e. The final type-certification basis may consist of a combination of the certification specifications of the applicable airworthiness code at different amendment levels ranging from the original type-certification basis to the most current amendments, and special conditions.

Chapter 4. Other considerations

1. Design related operating requirements

The use of exceptions under 21.A.101 is not intended to alleviate or preclude compliance with applicable operating rules or directives that prescribe compliance with the applicable additional airworthiness (design-related) specifications for operations.

2. Excepted products under 21.A.101(c)

a. An applicant for a design change to an excepted product may demonstrate that the changed product complies with the existing type-certification basis incorporated by reference in the TC. If the Agency finds that the change is significant 'in an area', the Agency will require compliance with a later amendment to the existing type-certification basis that applies to that affected area and any certification specification the Agency finds is directly related. For excepted products, changes that meet one of the following criteria, in the area of change, are automatically considered significant if:
   - The general configuration or the principles of construction are not retained, or
   - The assumptions used for certification of the product to be changed do not remain valid.

b. However, the Agency may allow the applicant to comply with an earlier amendment to the airworthiness code initially designated or with the existing type-certification basis if the Agency agrees to the applicant's justification.

c. For a design change to an excepted product that contains new features, which are not covered in the existing type-certification basis, the Agency will designate the applicable certification specifications at the appropriate amendment level, beginning with the existing type-certification basis and progressing to the most appropriate later amendment level for the change. For a change that contains new design features that are novel and unusual for which there are no later applicable certification specifications at a later amendment level, the Agency will designate special conditions per 21.101(d).

d. The exception provided for excepted products under 21.A.101(c) applies at the aircraft level only. Design changes to type-certificated engines and propellers installed on these excepted aircrafts are assessed as separate products using 21.A.101(a) and (b).

3. Special conditions, 21.A.101(d)

21.A.101(d) allows for the application of special conditions, or for changes to existing special conditions, to address the changed designs where the proposed type-certification basis does not provide adequate standards for an area, system, part or appliance related to the change and no adequate standard exist in any subsequent amendment of the applicable airworthiness code up to the airworthiness code in effect on the date of the application for the change. The objective is to achieve a level of safety consistent with that provided for other areas, systems, parts or appliances affected by the change by the other certification specifications of the proposed type-certification basis. The application of special conditions to a design change is not, in itself, a reason for it to be classified as either a substantial change or a significant change. When the change is significant with earlier certification specifications allowed through exceptions, or not significant, the level of safety intended by the special conditions should be consistent with the agreed type-certification basis. Note that special conditions may also be applied under 21.A.16B when the intended use of the changed product is unconventional or experience from other similar products in service or products having similar design features has shown that unsafe conditions may develop.

4. Effective period for an application to change a Type-Certificate (21.A.101(e))

Per 21.A.101(e), an application for, or a change to, a TC for large aeroplanes and large rotorcraft is effective for 5 years, and an application for a change to any other TC is effective for 3 years. This is intended to ensure that the type-certification basis for the changed product is as current as practical. According to 21.A.101(e) (1) and (2), in a case where the change has not been approved, or it is clear that it will not be approved under the time limit established under this subparagraph, the applicant may:

1. File a new application for a change to the type-certificate and comply with all the provisions of paragraph 21.A.101 (a) applicable to an original application for a change; or
2. File for an extension of the original application and comply with the provisions of paragraph (a) for an effective date of application, to be selected by the applicant, not earlier than the date which precedes the date of approval of the change by the time period established under this subparagraph for the original application for the change.

This is consistent with the requirements of 21.A.17 for a new TC and defines the process of updating the type-certification basis if these time limits are exceeded.

5. Special purpose aircraft

When a change is proposed to aircraft which is designed or modified for a special purpose to operate in restricted airworthiness category (under a restricted certificate of airworthiness), the process of establishing the type-certification basis of the changed product is in principle the same as for aircraft with a standard certificate of airworthiness. 21.A.101 is equally applicable to those special purpose aircraft, except that the applicable certification specifications, the proposed change must comply with, can exclude the paragraphs of the applicable airworthiness code that the Agency finds inappropriate for the special purpose for which the aircraft is to be used and may include possible alternative specifications to address that special purpose. Nevertheless, the 'top-down' approach under 21.A.101(a) and (b) (and the guidance in Chapter 3 of this GM) generally applies also to special purpose aircraft unless the aircraft is meeting the criteria in 21.A.101(c) for excepted products, for which 'bottom-up' approach applies (see above Section 2 in this Chapter). All the exception routes under 21.A.101(b)(1), (2) and (3) are still available, in particular the 'not materially contributing to the level of safety' and 'impractical' exceptions may be found justifiable considering the intended special purpose of the aircraft.

6. Reserved

7. Documentation.

All changes that result in a revision to the product's type-certification basis should be reflected on the amended TC or STC. The resulting type-certification basis should be retained as it forms part of the compliance record required by the applicable Agency's internal working procedures.

Appendix A. to GM 21.A.101 Classification of Changes

21.A.101
GM 21.A.101 Establishment of the type-certification basis of changed aeronautical products
Appendix B to GM 21.A.101 Procedure for evaluating impracticality of applying latest certification specifications to a changed product
Appendix C to GM 21.A.101 The use of service experience in the certification process
Appendix D to GM 21.A.101 Tables and figures to assist CPR understanding
Appendix E to GM 21.A.101 Related Part 21 Requirements

The following examples of substantial, significant and not significant changes are adopted by the Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA) and Transport Canada Civil Aviation (TCCA) through an international collaboration. The classification may change due to cumulative effects and/or combinations of individual changes. The 'N/A' indicated in the substantial example tables indicates 'Not Applicable' at the 21.A.19 'Substantial' evaluation phase.

Table 1. Examples of changes for Small Aeroplanes:

The following examples are for SUBSTANTIAL changes for Small Aeroplanes (CS-23):				
Description of change	Is there a Change to the General Configuration? 21.A.101(b)(1) (i)	Is there a Change to the Principles of Construction? 21.A.101(b)(1) (i)	Have the assumptions used for Certification been invalidated? 21.A.101(b)(1) (ii)	Notes

Change in wing location (tandem, forward, canard, high/low)	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Fixed wing to tilt wing	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Increase or decrease in the number of engines	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Replacement of piston or turbo-prop engines with turbojet or turbofan engines	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change in engine configuration (tractor to pusher)	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Increase from subsonic to supersonic flight regime	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change from an all metal airplane to all composite primary structure (fuselage, wing, empennage).	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.

The following examples are for SIGNIFICANT changes for Small Aeroplanes (CS-23):				
Description of change	**Is there a Change to the General Configuration? 21.A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21.A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21.A.101(b)(1(ii)**	**Notes**
Conventional tail to T-tail or Y-tail, or vice versa	Yes	No	Yes	Change in general configuration. Requires extensive structural, flying qualities and performance re-investigation. Requires a new AFM to address performance and flight characteristics.
Changes in wing configuration such as change in dihedral, changes in wing span, flap or aileron span, addition of winglets, or increase of more than 10% of the original wing sweep at the quarter chord	Yes	No	Yes	Change in general configuration. Likely requires extensive changes to wing structure. Requires a new AFM to address performance and flight characteristics. Note: Small changes to wingtip are not significant changes. See table for not significant changes.
Changes to tail configuration such as the addition of tail strakes or angle of incidence of the tail	Yes	No	Yes	Change in general configuration. Likely requires extensive changes to tail structure. Requires a new AFM to address performance and flight characteristics. Note: Small changes to tail are not significant changes.
Tricycle / tailwheel undercarriage change or addition of floats	Yes	No	No	Change in general configuration. Principles of construction and certification assumptions remain valid.
Passenger to freighter configuration conversion which involves the introduction of a cargo door or an increase in floor loading of more than 20%, or provision for carriage of passengers and freight together	Yes	No	Yes	Change in general configuration affecting load paths, aeroelastic characteristics, aircraft related systems, etc. Change in design assumptions.
Replace reciprocating engines with the same number of turbo-propeller engines where the operating envelope is expanded	No	No	Yes	Invalidates certification assumptions. Requires a new AFM to address performance and flight characteristics.

Addition of a turbocharger that changes the power envelope, operating range, or limitations .	No	No	Yes	Invalidates certification assumptions due to changes in operating envelope and limitations. Requires new AFM to address performance and flight characteristics.
The replacement of an engine of higher rated power or increase thrust would be considered significant if it would invalidate the existing substantiation, or would change the primary structure, aerodynamics, or operating envelope sufficiently to invalidate the assumptions of certification	No	Yes	Yes	Invalidates certification assumptions. Requires a new AFM to address performance and flight characteristics. Likely changes to primary structure. Requires extensive construction reinvestigation.
A change in the type of material, such as composites in place of metal (or one composite fiber material system with another (e.g., carbon for fiberglass), for primary structure would normally be assessed as a significant change	No	Yes	Yes	Change in principles of construction and design from conventional practices . Likely change in design/certification assumptions.
Change involving appreciable increase in design speeds Vd, Vmo, Vc, or Va	No	No	Yes	Certification assumptions invalidated. Requires new AFM to address performance and flight characteristics.
Short Take-Off and Landing (STOL) kit	No	No	Yes	Certification assumptions invalidated. Requires new AFM to address performance and flight characteristics.
A change in the rated power or thrust is likely to be regarded as significant if the design speeds are thereby changed so that compliance needs to be rejustified with a majority of certification specifications.	No	No	Yes	Certification assumptions invalidated. Requires new AFM to address performance and flight characteristics.
Fuel state: such as compressed gaseous fuels, or fuel cells. This could completely alter the fuel storage and handling systems and possibly affect the aeroplane structure	No	No	Yes	Changes in design/certification assumptions. Extensive alteration of fuel storage and handling systems.
A design change that alters the aircraft flight characteristics or performance from the type design would normally be significant if it appreciably changes the kinematics or dynamics of the aeroplane.	No	No	Yes	Certification assumptions invalidated. Requires new AFM to address performance and flight characteristics.
A change in the flight control concept for an aircraft, for example to fly by wire (FBW) and sidestick control, or a change from hydraulic to electronically actuated flight controls, would in isolation normally be regarded as a significant change.	No	No	Yes	Changes in design and certification assumptions. Requires extensive systems architecture and integration reinvestigation. Requires new AFM.
Change to aeroplane's cabin operating altitude, or operating pressure	No	Yes	Yes	An increase greater than 10 % in maximum cabin pressure differential invalidates certification assumptions and the fundamental approach used in decompression, structural strength, and fatigue.
Addition of cabin pressurisation system	No	Yes	Yes	Extensive airframe changes affecting load paths, fatigue evaluation, aero elastic characteristics, etc. Invalidates design assumptions.
Changes in types and number of emergency exits or an increase in maximum certificated passenger capacity	Yes	No	Yes	Emergency egress certification specifications exceed those previously substantiated. Invalidates assumptions of certification.

A change in the required number of flight crew, which necessitates a complete cockpit rearrangement, and/or an increase in pilot workload would be a significant change.	No	No	Yes	Extensive changes to avionics and aircraft systems. Invalidates certification assumptions. Requires new AFM.
Expansion of an aircraft's operating envelope	No	No	Yes	An appreciable expansion of operating capability would normally be a significant change (e.g., an increase in maximum altitude limitation, approval for flight in known icing conditions, or an increase in airspeed limitations). Merely operating a product to an expanded envelope for which it was originally designed is generally not a significant change. In this case, the assumptions used for certification of the basic product remain valid and the results can be applied to cover the changed product with predictable effects or can be demonstrated without significant changes to the product.
Replacement of an aviation gasoline engine with an engine of approximately the same horsepower utilising diesel fuel	No	No	Yes	A major change to the aeroplane. The general configuration and principles of construction will usually remain valid; however, the assumptions for certification are invalidated.
Comprehensive flight deck upgrade, such as conversion from entirely federated, independent electromechanical flight instruments to highly integrated and combined electronic display systems with extensive use of software and/or complex electronic hardware	No	No	Yes	Affects avionics and electrical systems integration and architecture concepts, or philosophies.
Introduction of autoland	No	No	Yes	Invalidates original design assumptions.
Airframe life extension	No	No	Yes	This modification pertains to fuselage and/or wing limits, and ageing aeroplane concerns. An increase from the original life limit which constitutes a re-evaluation of certification design assumptions.
Extensive structural airframe modification, such as a large opening in fuselage	Yes	No	No	Requires extensive changes to fuselage structure, affects aircraft systems, and requires a new AFM to address performance and flight characteristics.
Fuselage stretch or shortening in the cabin or pressure vessel	Yes	No	Yes	Cabin interior changes are related changes since occupant safety considerations are impacted by a cabin length change. Even if a new cabin interior is not included in the product level change, the functional effect of the fuselage plug has implications on ccupant safety (e.g., the dynamic environment in an emergency landing, emergency evacuation, etc.), and thus the existing cabin interior becomes an affected area.
Conversion from normal category to commuter category aeroplane	Yes	No	Yes	In many cases this change could be considered a substantial change to the type design. Therefore, a proposed change of this nature would be subject to Agency determination under 21.A.19.

The following examples are for SIGNIFICANT changes for Small Aeroplanes (CS-23):				
Description of change	**Is there a Change to the General Configuration? 21.A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21.A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A..101(b)(1(ii)**	**Notes**

Addition of wingtip modifications (not winglets)	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Installation of skis or wheel skis	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
FLIR or surveillance camera installation.	No	No	No	Additional flight or structural evaluation may be necessary but the change does not alter basic airplane certification.
Litter, berth and cargo tie down device installation	No	No	No	
Increased tire size, including tundra tires	No	No	No	
Replacement of one propeller type with another (irrespective of increase in number of blades)	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Addition of a turbocharger that does not appreciably change the power envelope, operating range, or limitations (e.g., a turbo- normalised engine), (e.g., where the additional power is used to enhance high altitude or hot day performance.)	No	No	No	
Substitution of one method of bonding for another (e.g., change in type of adhesive)	No	No	No	
Substitution of one type of metal for another	No	No	No	
Any change in construction or fastening not involving primary structure	No	No	No	
A new fabric type for fabric skinned aircraft	No	No	No	
Increase in flap speed or undercarriage limit speed	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Structural strength increases	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Instrument Flight Rules (IFR) upgrades involving installation of components (where the original certification does not indicate that theaeroplane is not suitable as an IFR platform, e.g., special handling concerns)	No	No	No	
Fuel lines, where engine horsepower is increased but fuel flow is not increased beyond the certified maximum amount.	No	No	No	
Fuel tanks, where fuel is changed from gasoline to diesel fuel and tank support loads are small enough that an extrapolation from the previous analysis would be valid. Chemical compatibility would have to be substantiated	No	No	No	

Limited changes in a pressurisation system, e.g., number of outflow valves, type of controller, or size of pressurised compartment, but the system must be re-substantiated if the original test data is invalidated.	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Install a quieter exhaust system	No	No	No	
Changes in engine cooling or cowling	No	No	No	
Changing fuels of substantially the same type: Such as AvGas to AutoGas, AvGas (80/87) to AvGas (100LL), Ethanol to Isopropyl Alcohol, Jet B to Jet A (although Jet A to Jet B may be considered significant due to the fact that Jet B is considered potentially more explosive).	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Fuels that specify different levels of 'conventional' fuel additives that do not change the primary fuel type. Different additives (MTBE, ETBE, ethanol, amines, etc.) in AvGas would not be considered a significant change.	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
A change to the maximum take-off weight of less than 5% unless assumptions made in justification of the design are thereby invalidated.	No	No	No	Although a major change to the aeroplane, likely the original general configuration, principles of construction and certification assumptions remain valid. (Unless this weight increase would result in a shift to commuter category.)
An additional aileron tab (e.g. on the other wing)	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Larger diameter flight control cables with no change in routing, or other system design	No	No	No	
Autopilot installation (for Instrument Flight Rules (IFR) use, where the original certification does not indicate that the aeroplane is not suitable as an IFR platform)	No	No	No	Although a major change to the airplane, likely the original general configuration, principles of construction and certification assumptions remain valid.
Increased battery capacity or relocate battery	No	No	No	

The following examples are for NOT SIGNIFICANT changes for Small Aeroplanes (CS-23):				
Description of change	**Is there a Change to the General Configuration? 21.A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21.A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A..101(b)(1(ii)**	**Notes**
Replace generator with alternator	No	No	No	
Additional lighting (e.g., navigation lights, strobes)	No	No	No	
Higher capacity brake assemblies	No	No	No	
Increase in fuel tank capacity	No	No	No	Not a product level change, unless it is tied with an increase in gross weight.
Addition of an oxygen system	No	No	No	

Relocation of a galley.	No	No	No	
Passenger to freight (only) conversion with no change to basic fuselage structure.	No	No	No	Although a major change to the aeroplane, likely the original general configuration, principles of construction and certification assumptions remain valid. Requires certification substantiation applicable to freighter certification specifications
New cabin interior with no fuselage length change	No	No	No	
Installation of new seat belt or shoulder harness	No	No	No	
A small increase in cg range.	No	No	No	At product level, no change in general configuration, principles of construction & certification assumptions.
APU Installation that is not flight essential	No	No	No	A major change to the airplane level, likely the original general configuration, principles of construction and certification assumptions remain valid. Requires certification substantiation applicable to APU installation requirements.
An alternative autopilot	No	No	No	
Addition of Class B Terrain Awareness and Warning Systems (TAWS)	No	No	No	

Figure 2. Table of examples of changes for Large Aeroplanes (CS-25)

The following examples are for SUBSTANTIAL changes for Large Aeroplanes (CS-25):				
Description of change	**Is there a Change to the General Configuration? 21.A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21.A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21.A.101(b)(1(ii)**	**Notes**
Change in the number or location of engines, e.g., four to two wing- mounted engines or two wing-mounted to two body- mounted engines.	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change from a high wing to low wing configuration.	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change from an all metal airplane to all composite primary structure (fuselage, wing, empennage).	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change of empennage configuration for larger aeroplanes (cruciform vs. 'T' or 'V' tail)	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Increase from subsonic to supersonic flight regime	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.

The following examples are for SIGNIFICANT changes for Large Aeroplanes (CS-25):

Description of change	Is there a Change to the General Configuration? 21A.101(b)(1)(i)	Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)	Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)	Notes
Reduction in the number of flight crew (In conjunction with flight deck update).	Yes	No	Yes	Extensive changes to avionics and aircraft systems. Impact to crew workload and human factors, pilot type rating.
Modify an aeroplane for flight in known icing conditions by adding systems for ice detection and elimination	Yes	No	Yes	New aircraft operating envelop. Requires major new systems installation and aircraft evaluation. Operating envelope changed.
Conversion - passenger or combination freighter/passenger to all freighter including cargo door, redesign floor structure and 9g net or rigid barrier	Yes	No	Yes	Extensive airframe changes affecting load paths, aeroelastic characteristics, aircraft related systems for fire protection, etc. Design assumptions changed from passenger to freighter.
Increase in cabin pressurisation.	No	No	Yes	Typically, a change greater than 10 % in operational cabin pressure differential. May require extensive airframe changes affecting load paths, fatigue evaluation, aeroelastic characteristics, etc. Invalidates design assumptions.
Addition of leading edge slats	Yes	No	No	Requires extensive changes to wing structure, adds aircraft level systems, and requires a new AFM to address performance and flight characteristics.
Fuselage stretch or shortening in the cabin or pressure vessel	Yes	No	Yes	Cabin interior changes are related changes since occupant safety considerations are impacted by a cabin length change. Even if a new cabin interior is not included in the product level change, the functional effect of the fuselage plug has implications on occupant safety (e.g., the dynamic environment in an emergency landing, emergency evacuation, etc.), and thus the cabin interior becomes an affected area
Extensive structural airframe modification, such as installation of a large telescope with large opening in fuselage	Yes	No	No	Requires extensive changes to fuselage structure, affects aircraft level systems, and requires a new aeroplane flight manual to address performance and flight characteristics.
Changing the number of axles or number of landing gear done in context with a product level change which involves changing the aeroplane gross weight	Yes	No	No	Requires extensive changes to aircraft structure, affects aircraft l systems and requires AFM changes.
Primary structure changes from metallic material to composite material	No	Yes	No	Change in principles of construction and design from conventional practices.
Airframe life extension	No	Yes	No	This modification pertains to fuselage and/or wing limits, and ageing aeroplane concerns. An increase from the original life limit which constitutes a re-evaluation of certification design assumptions.
Typically, an increase in design weight of more than 10%	No	No	Yes	Requires extensive re-substantiation of aircraft structure, aircraft performance and flying qualities and associated systems.
Installation of winglets.	Yes	No	Yes	
Wing changes in span, sweep, and tip designs or wing chord	Yes	No	Yes	When it requires extensive changes to wing structure, adds aircraft level systems, and requires a new AFM to address performance and flight characteristics. (NOTE: Potentially substantial if it is a change from a high wing to a low wing, or a new wing.)

Change in type or number of emergency exits or an increase in the maximum certificated number of passengers demonstrated	Yes	No	Yes	The new emergency egress certification specifications exceed those previously substantiated.
Comprehensive flight deck upgrade, such as conversion from entirely federated, independent electro-mechanical flight instruments to highly integrated and combined electronic display systems with extensive use of software and possibly complex hardware	No	No	Yes	Affects avionics and electrical systems integration and architecture concepts and philosophies.
Change in primary flight controls to fly by wire (FBW) system. (Some aeroplanes have some degree of FBW. Achieving full FBW may be a not significant change on some aeroplanes.)	No	No	Yes	When the degree of change is so extensive that it affects basic aircraft systems integration and architecture concepts and philosophies. This drives a complete reassessment of flight crew workload, handling qualities, and performance evaluation, which are different from the original design assumptions.
Replace reciprocating with turbo-propeller engines	Yes	No	No	Requires extensive changes to airframe structure, adds aircraft level systems, and requires a new AFM to address performance and flight characteristics.
Typically a thrust increase of more than 10%	No	No	Yes	Requires extensive re-substantiation of powerplant installation, and has a marked effect on aircraft performance and flying qualities.
Initial installation of an autoland system	No	No	Yes	Baseline aeroplane not designed for autoland operation, potential crew work load and systems compatibility issues
Installation of a new fuel tank (horizontal stabilizer tank or auxiliary fuel tank in the fuselage outside the wing in conjunction with increased maximum take-off weight and take-off thrust)	No	No	Yes	Requires changes to airframe, systems and AFM. Results in performance changes.
Main deck cargo door installation	Yes	No	No	Redistribution of internal loads, change in aeroelastic characteristics, system changes.
Expansion of an aircraft's operating envelope	No	No	Yes	An expansion of operating capability would normally be a significant change (e.g. an increase in maximum altitude limitation, approval for flight in known icing conditions, or an increase in airspeed limitations). Merely operating a product to an expanded envelope for which it was originally designed is generally not a significant change. In this case, the assumptions used for certification of the basic product remain valid and the results can be applied to cover the changed product with predictable effects or can be demonstrated without significant physical changes to the product.
Conversion from a passenger floor to a cargo floor and installation of a cargo handling system	No	No	Yes	Completely new floor loading and design. Redistribution of internal loads, change in cabin safety certification specifications, system changes.
Initial installation of an APU essential for aircraft flight operation	No	No	Yes	Changes emergency electrical power certification specifications, change in AFM and operating characteristics.
Conversion from hydraulically actuated brakes to electrically actuated brakes	No	No	Yes	Assumptions of certification for aeroplane performance are changed.

Change to aeroplane's cabin operating altitude, or operating pressure	No	No	Yes	An increase greater than 10 % in maximum cabin pressure differential invalidates certification assumptions and the fundamental approach used in decompression. structural strength, and fatigue analysis.
Installation of engine thrust reversers	Yes	No	Yes	

The following examples are for NOT SIGNIFICANT changes for Large Aeroplanes (CS-25):

Description of change	Is there a Change to the General Configuration? 21A.101(b)(1)(i)	Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)	Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)	Notes
Alternate engine installation or hush kit at same position	No	No	No	Typically it is not significant so long as there is not more than a 10% increase in thrust or a change in the principles of propulsion.
A small change in fuselage length due to re-fairing the aft body or radome	No	No	No	For cruise performance reasons, where such changes do not require extensive structural, systems, aerodynamic or AFM changes.
Re-fairing of wing tip caps (for lights, fuel dump pipes) and addition of splitter plates to the trailing edge thickness of the cruise airfoil	No	No	No	Does not require extensive structural, AFM, or systems changes.
Additional power used to enhance high altitude or hot day performance	No	No	No	Usually no change in basic operating envelope. Existing cert. data can be extrapolated. Could be significant product change if the additional power is provided by installation of a rocket motor or additional, on demand engine due to changes in certification assumptions.
Initial installation of an autopilot system	No	No	See note	It may be possible that the modification is adaptive in nature, with no change to original certification assumptions. However, in certain cases the installation of an auto-pilot may include extensive changes and design features which change the assumptions for certification (i.e. installation of the auto-pilot may introduce a number of additional mechanical and electronic failure modes and change the hazard classification of given aircraft level failures).
Change from assembled primary structure to monolithic or integrally machined structure	No	No	No	Method of construction must be well understood.
Modification to ice protection systems	No	No	No	Re-certification required, but type-certification basis is adequate.
Brakes: design or material change, e.g., steel to carbon	No	No	No	Re-certification required, but type-certification basis is adequate.
Redesign floor structure	No	No	No	By itself, this is not a significant product change. It is significant if part of a cargo conversion of a passenger aeroplane.
New cabin interior with no fuselage length change	No	No	No	A new cabin interior includes new ceiling and sidewall panels, stowage, galleys, lavatories, and seats. New and novel features in the cabin interior may require special conditions. Many interior related certification specifications are incorporated in operational rules. Even though the design approval holder may not be required to comply with these certification specifications, the operator may be required to comply.
A re-arrangement of an interior (e.g. seats, galleys, lavatories, closets, etc.)	No	No	No	Re-arrangement requires the use of the existing floor mounting structure.

Novel or unusual method of construction of a component	No	No	No	Special conditions could be required if there are no existing certification specifications that adequately address these features. The component change does not rise to the product level change.
Initial installation of a non-essential APU	No	No	No	A stand-alone initial APU installation on an aeroplane originally designed to use ground/airport supplied electricity, and air-conditioning. In this case, the APU would be an option to be independent of airport power.

Table 3. Examples of Changes for Rotorcraft (CS-27 and-29)

The following examples are for SUBSTANTIAL changes for Rotorcraft (CS-27 and CS-29):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)**	**Notes**
Change from the number and/or configuration of rotors (e.g. main & tail rotor system to two main rotors	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.
Change from an all- metal rotorcraft to all composite rotorcraft	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.

The following examples are for SIGNIFICANT changes for Rotorcraft (CS-27 and CS-29):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)**	**Notes**
Comprehensive flight deck upgrade, such as conversion from entirely federated, independent electro-mechanical flight instruments to highly integrated and combined electronic display systems with extensive use of software and/or complex electronic hardware	No	No	Yes	Affects avionics and electrical systems integration and architecture concepts and philosophies.
Certification for flight into known icing conditions	No	No	Yes	
(Fixed) flying controls from mechanical to fly by wire	No	No	Yes	This drives a complete re-assessment of the rotorcraft controllability and flight control failure.
Addition of an engine; e.g., from single to twin or reduction of the number of engines; e.g., from twin to single	Yes	Yes	Yes	May be a substantial change depending upon project details.
A change of rotor drive system primary gearbox splash type lubrication system to a pressure lubricated system due to an increase in horsepower of an engine or changing a piston engine to a turbine engine	No	Yes	Yes	
A fuselage or tail boom modification that changes the primary structure, aerodynamics, and operating envelope sufficiently to invalidate the certification assumptions	Yes	No	Yes	

Application of an approved primary structure to a different approved model (e.g., installation on a former model of the main rotor approved on a new model that results in increase performance	No	Yes	Yes	
Extensive primary structure changes from metallic material to composite material.	No	Yes	Yes	Change in principles of construction and assumptions used for certification for the product level change. Changes of a few individual elements from metal to composite are not typically considered a significant change .
Emergency Medical Service (EMS) configuration with primary structural changes sufficient to invalidate the certification assumptions	No	No	Yes	Many EMS configurations will not be classified as significant. Modifications made for EMS are typically internal, and the general external configuration is normally not affected. These changes should not automatically be classified as significant.
Skid landing gear to wheel landing gear or wheel landing to skid	Yes	No	Yes	
Change of the number of rotor blades	Yes	No	Yes	
Change tail anti-torque device (e.g., tail rotor, ducted fan or other technology)	Yes	Yes	No	
Passenger configured helicopter to a fire fighting equipment configured helicopter	Yes	No	Yes	Depends on the fire fighting configuration.
Passenger configured helicopter to an agricultural configured helicopter	Yes	No	Yes	Depends on the agricultural configuration.
A new Category A certification approval to an existing configuration	No	No	Yes	
Instrument Flight Rules (IFR) upgrades involving installation of upgraded components for new IFR configuration	No	No	Yes	
Human External Cargo (HEC) certification approval	No	No	Yes	Must comply with the latest HEC certification specifications in order to obtain operational approval. HEC include fatigue, Quick Release Systems, High Intensity Radio Frequency (HIRF), One Engine Inoperative (OEI) performance and OEI procedures.
Reducing the number of pilots for IFR from 2 to 1	No	No	Yes	

The following examples are for NOT SIGNIFICANT changes for Rotorcraft (CS-27 and -29):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)**	**Notes**
Emergency floats	No	No	No	Must comply with the specific applicable certification specifications for emergency floats. This installation, in itself, does not change the rotorcraft configuration, overall performance, or operational capability. Expanding an operating envelope (such as operating altitude and temperature) and mission profile (such as passenger carrying operations to external load operations, or flight over water, or operations in snow conditions) are not by themselves so different that the original certification assumptions are no longer valid at the type-certificated product level.

FLIR or surveillance camera installation	No	No	No	Additional flight or structural evaluation may be necessary but the change does not alter the basic rotorcraft certification.
Helicopter Terrain Awareness Warning System (HTAWS) for operational credit	No	No	No	Certified per rotorcraft HTAWS AC guidance material and ETSO- C194.
Health Usage Monitoring System (HUMS) for Maintenance Credit	No	No	No	Certified per rotorcraft HUMS AC guidance material.
Expanded limitations with minimal or no design changes, following further tests/justifications or different mix of limitations (CG limits, oil temperatures, altitude, minimum/maximum weight, minimum/max external temperatures, speed, ratings structure)	No	No	No	Expanding an operating envelope (such as operating altitude and temperature) and mission profile (such as passenger carrying operations to external load operations, or flight over water, or operations in snow conditions) are not by themselves so different that the original certification assumptions are no longer valid at the type-certificated product level.
Installation of a new engine type, equivalent to the former one; leaving a/c installation and limitations substantially unchanged	No	No	No	Refer to AC 27-1 or AC 29-2 for guidance
Windscreen installation	No	No	No	Does not change the rotorcraft overall product configuration
Snow skis, 'Bear Paws'	No	No	No	Must comply with specific certification specifications associated with the change. Expanding an operating envelope (such as operating altitude and temperature) and mission profile (such as passenger carrying operations to external load operations, or flight over water, or operations in snow conditions) are not by themselves so different that the original certification assumptions are no longer valid at the type-certificated product level.
External Cargo Hoist	No	No	No	Must comply with the specific applicable certification specifications for external loads. This installation, in itself, does not change the rotorcraft configuration, overall performance, or operational capability. Expanding an operating envelope (such as operating altitude and temperature) and mission profile (such as passenger carrying operations to external load operations, or flight over water, or operations in snow conditions) are not by themselves so different that the original certification assumptions are no longer valid at the type-certificated product level.
Instrument Flight Rules (IFR) upgrades involving installation of upgraded components to replace existing components.	No	No	No	Not a rotorcraft level change.

Table 4. Examples for Engines (CS-E)

The following are examples of SUBSTANTIAL changes for Engines (CS-E):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1)(i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1)(i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1(ii)**	**Notes**
Turbine Engines				
Traditional turbofan to geared-fan engine	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required. Note: There may be certain circumstances where this change would be significant.

Low bypass ratio engine to high bypass ratio engine with an increased inlet area	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required. Note: There may be certain circumstances where this change would be significant
Turbojet to Turbofan	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required. Note: There may be certain circumstances where this change would be significant.
Turbo-shaft to turbo-propeller	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required. Note: There may be certain circumstances where this change would be significant.
Conventional ducted fan to unducted fan	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required. Note: There may be certain circumstances where this change would be significant.
Turbine engine for subsonic operation to afterburning engine for supersonic operation	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.

The following are examples of SIGNIFICANT changes for Engines (CS-E):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1) (i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1) (i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1) (ii)**	**Notes**
Turbine Engines				
Increase/decrease in the number of compressor/turbine stages with resultant change in approved limitations*. (* excludes life limits)	Yes	No	Yes	Change is associated with other changes to the ratings and operating limitations; engine dynamic behaviour in terms of backbone bending, torque spike effects on casing, surge and stall characteristics, etc.
New design fan blade and fan hub, or a bladed fan disk to a blisk or a fan diameter change that could not be retrofitted	Yes	No	Yes	Change is associated with other changes to the engine thrust, ratings and operating limitations; engine dynamic behaviour in terms of backbone bending, torque spike effects on casing, foreign object ingestion behaviour, burst model protection for the aircraft. If there is a diameter change, installation will be also affected.
Hydro-Mechanical control to FADEC/EEC without hydro-mechanical backup	Yes	No	No	Change in engine control configuration. Not interchangeable. Likely fundamental change to engine operation.
A change in the containment case from hard-wall to composite construction or vice-versa, that could not be retrofitted without additional major changes to the engine or restrictions in the initial limitations in the installation manual	No	Yes	No	Change in methods of construction that have affected inherent strength, backbone bending, blade to case clearance retention, containment wave effect on installation, effect on burst model, torque spike effects.

Replace gas generator (core, turbine/compressor/co mbustor) with a different one that is associated with changes in approved limitations* * excludes life limits	No	No	Yes	Change is associated with other changes that would affect engine thrust/power and may affect the dynamic behaviour of the engine. Assumptions used for certification may no longer be valid
Piston engines				
Convert from mechanical to electronic control system	Yes	Yes	No	Change in engine configuration: Installation interface of engine changed. Changes to principles of construction: Digital controllers and sensors require new construction techniques and environmental testing.
Add turbocharger that increases performance and changes in overall product	Yes	No	Yes	Change in general configuration: Installation interface of engine changed (exhaust system). Certification assumptions invalidated: Change in operating envelope and performance.
Convert from air-cooled cylinders to liquid cooled cylinders.	Yes	No	Yes	Change in general configuration: Installation interface of engine changed (cooling lines from radiator, change to cooling baffles). Certification assumptions invalidated: Change in operating envelope and engine temperature specifications.
Convert from spark-ignition to compression-ignition	Yes	No	Yes	Change in general configuration: Installation interface of engine changed (no mixture lever). Certification assumptions invalidated: Change in operating envelope and performance.

The following are examples of NOT SIGNIFICANT changes for Engines (CS-E):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1) (i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1) (i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1) (ii)**	**Notes**
Turbine Engines				
Change in the material from one type of metal to another type of metal of a compressor drum	No	No	No	No change in performance. Assumptions are still valid.
Increase/decrease in the number of compressor/turbine stages without resultant change in performance envelope	No	No	No	No change in performance. Assumptions are still valid.
New components internal to the FADEC/EEC the introduction of which does not change the function of the system	No	No	No	No change in configuration. Retrofitable Assumptions used for certification are still valid. Possible changes in principles of construction are insignificant.
Software changes	No	No	No	
Rub-strip design changes	No	No	No	
A new combustor that does not change the approved limitations, or dynamic behaviour* (* excludes life limits)	No	No	No	
Bearing changes	No	No	No	
New blade designs with similar material that can be retrofitted	No	No	No	
Fan blade re-design that can be retrofitted	No	No	No	
Oil tank re-design	No	No	No	
Change from one hydro-mechanical control to another hydro-mechanical control	No	No	No	

Change to limits on life limited components	No	No	No	
Changes to limits on exhaust gas temperature	No	No	No	
Changes in certification maintenance requirements (CMR) with no configuration changes	No	No	No	
Bump ratings within the product's physical capabilities that may be enhanced with gas path changes such as blade re-stagger, cooling hole patterns, blade coating changes, etc.	No	No	No	
A change in principal physical properties and mechanics of load transfer of a material of primary structure or highly loaded components. For example, change from traditional metal to either an exotic alloy or a composite material on a highly loaded component.	No	No	No	
Piston engine				
A change in principal physical properties and mechanics of load transfer of a material of primary structure or highly loaded components. For example, change from traditional metal to either an exotic alloy or a composite material on a highly loaded component.	No	No	No	
New or redesigned cylinder head, or valves or pistons.	No	No	No	
Changes in crankshaft	No	No	No	
Changes in crankcase	No	No	No	
Changes in carburettor	No	No	No	
Changes in mechanical fuel injection system	No	No	No	
Changes in mechanical fuel injection pump	No	No	No	
Engine model change to accommodate new aeroplane installation. No change in principles of operation of major subsystems; no significant expansion in power or operating envelopes or in limitations.	No	No	No	
No change in basic principles of operation, or a simple mechanical change. For example, change from dual magneto to two single magnetos on a model.	No	No	No	
Subsystem change produces no changes in base engine input parameters, and previous analysis can be reliably extended. For example, a change in turbocharger where induction system inlet conditions remain unchanged, or if changed, the effects can be reliably extrapolated.	No	No	No	
Change in material of secondary structure or not highly loaded component. For example, a change from metal to composite material in a non-highly loaded component, such as an oil pan that is not used as a mount pad.	No	No	No	
Change in material that retains the physical properties and mechanics of load transfer. For example, a change in trace elements in a metal casting for ease of pouring or to update to a newer or more readily available alloy with similar mechanical properties.	No	No	No	

Table 5. Examples of Changes for Propellers (CS-P)

The following are examples of SUBSTANTIAL changes for Propellers (CS-P):

Description of change	Is there a Change to the General Configuration? 21A.101(b)(1) (i)	Is there a Change to the Principles of Construction? 21A.101(b)(1) (i)	Have the assumptions used for Certification been invalidated? 21A.101(b)(1) (ii)	Notes
Change in the number of blades	N/A	N/A	N/A	Proposed change in design is so extensive that a substantially complete investigation of compliance with the applicable certification specifications is required.

The following are examples of SIGNIFICANT changes for Propellers (CS-P):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1) (i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1) (i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1) (ii)**	**Notes**
Principle of pitch change such as a change from single acting to dual acting	Yes	Yes	Yes	Requires extensive modification of the pitch change system with the introduction of back-up systems. The inherent control system requires re-evaluation.
Introduction of a different principle of blade retention such as a single row to a dual row bearing	Yes	Yes	No	Requires extensive modification of the propeller hub and blade structure. The inherent strength requires re-evaluation.
A hub configuration change such as a split hub to a one-piece hub	Yes	Yes	No	Requires extensive modification of the propeller hub structure. The inherent strength requires re-evaluation.
Changing the method of mounting the propeller to the engine such as a spline to a flange mount	Yes	Yes	No	Requires extensive modification of the propeller hub structure. Note: Such a change could be considered not significant if implemented without a change in general configuration or principals of construction.
Change in hub material from steel to aluminium	Yes	Yes	No	Requires extensive modification of the propeller hub structure and change to method of blade retention. The inherent strength requires re-evaluation.
Change in blade material from metal to composite	Yes	Yes	Yes	Requires extensive modification of the propeller blade structure and change to method of blade retention. Composite construction methods required. The inherent strength requires re-evaluation.
Change from hydro-mechanical to electronic control	Yes	Yes	Yes	Electronic manufacturing and design methods required. Assumptions used for certification are no longer valid or were not addressed in the original certification, i.e., high intensity radio frequency (HIRF) and lightning protection, fault tolerance, software certification and other aspects. The propeller will require special conditions under 21.A.16B.

The following are examples of NOT SIGNIFICANT changes for Propellers (CS-P):				
Description of change	**Is there a Change to the General Configuration? 21A.101(b)(1) (i)**	**Is there a Change to the Principles of Construction? 21A.101(b)(1) (i)**	**Have the assumptions used for Certification been invalidated? 21A.101(b)(1) (ii)**	**Notes**
Change in the material of a blade bearing	No	No	No	
Change to a component in the control system	No	No	No	
Change to a de-icer boot	No	No	No	

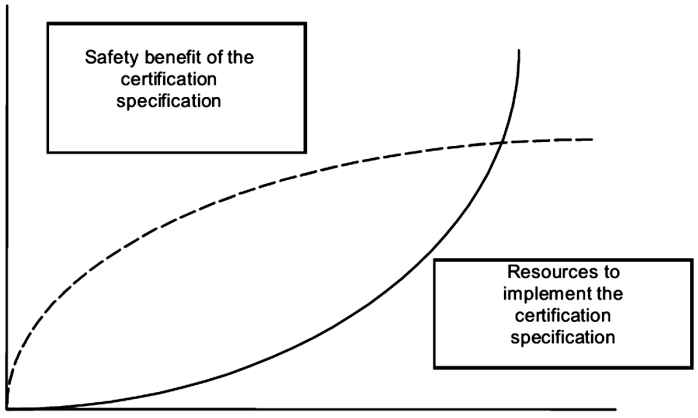
Changes to the operational design envelope such as an increase in power.	No	No	No	Propeller's operating characteristics and inherent strength require re-evaluation.
Change to the intended usage such as normal to aerobatic category.	No	No	No	Propeller's operating characteristics and inherent strength require re-evaluation.

Appendix B to GM 21.A.101 Procedure for evaluating impracticality of applying latest certification specifications to a changed product

21.A.101
GM 21.A.101 Establishment of the type-certification basis of changed aeronautical products
Appendix A. to GM 21.A.101 Classification of Changes
Appendix C to GM 21.A.101 The use of service experience in the certification process
Appendix D to GM 21.A.101 Tables and figures to assist CPR understanding
Appendix E to GM 21.A.101 Related Part 21 Requirements

1. Introduction
   a. The basic principle of enhancing the level of safety of changed aeronautical products is to apply the latest certification specifications for significant design changes to the greatest extent practical. In certain cases, the cost of complying fully with a later certification specification may not be commensurate with the small safety benefit achieved. It is recognised that the existing fleet and newly produced aeroplanes, engines and propellers are safe, and any unsafe condition is immediately addressed through the airworthiness directive process. These factors form the basis where compliance with the latest certification specification may be considered impractical, thereby allowing compliance with an earlier certification specification. This appendix gives one method of determining if compliance with a later requirement standard is impractical; however, this does not preclude the use of other methods for improving the safety of aeronautical products.
   b. This GM recognises that other procedures can be used and have historically been accepted on a case-by-case basis. The acceptance of results through the use of these procedures may vary from state to state. Consequently, they may not be accepted through all bilateral certification processes. Regardless of which method is used, the process should show that a proposed type-certification basis is able to achieve a positive safety benefit for the overall product.
   c. In this regard, any method used should encourage incorporating safety enhancements that will have the most dramatic impact on the level of safety of the aircraft while considering effective use of resources. This important point is illustrated graphically in the accompanying figure. This figure notionally shows the interrelation between the total resources required for incorporating each potential safety enhancement with the corresponding net increase in safety benefit.

Figure 2. Safety Benefits vs. Resources



   d. Typically, one will find that there are proposals that can achieve a positive safety benefit and that are resource effective. Conversely, there are proposals that may achieve a small safety benefit at the expense of a large amount of resources to implement. Clearly, there will be a point where a large percentage of the potential safety benefit can be achieved with a reasonable expenditure of resources. The focus of the

methods used should be to Safety benefit of the certification specification Resources to implement the certification specification determine the most appropriate standards relative to the respective cost to reach this point.

e. This Appendix to GM 21.A.101 provides procedural guidance for determining the practicality of applying a certification specification at a particular amendment level to a changed product. This guidance can be used to evaluate the safety benefit and resource impact of implementing the latest airworthiness certification specifications in the type-certification basis of a changed product. The procedure is generic in nature and describes the steps and necessary inputs that any applicant can use on any project to develop a position.

f. The procedure is intended to be used, along with good engineering judgment, to evaluate the relative merits of a changed product complying with the latest certification specifications. It provides a means, but not the only means, for an applicant to present its position in regard to impracticality.

g. The type-certification basis for a change to a product will not be at an amendment level earlier than the existing type-certification basis. Therefore, when determining the impracticality of applying a certification specification at the latest amendment level, only the increase in safety benefits and costs beyond compliance with the existing type-certification basis should be considered.

2. Procedure for evaluating Impracticality of applying latest certification specifications to a changed product
The following are steps to determine the impracticality of applying a certification specification at a particular amendment level. The first step will be to identify the regulatory change being evaluated.

a. Step 1: Identify the regulatory change being evaluated.
In this step, it will be necessary to document:

(1) The specific certification specification (for example, CS 25.365);

(2) The amendment level of the existing type-certification basis for the certification specification; and

(3) The latest amendment level of the certification specification.

b. Step 2: Identify the specific hazard that the certification specification addresses

(1) Each certification specification and subsequent amendments are intended to address a hazard or hazards. In this step the specific hazard(s) is/are identified. This identification will allow for a comparison of the effectiveness of amendment levels of the certification specification at addressing the hazard.

(2) In many cases the hazard and the cause of the hazard will be obvious. When the hazard and its related cause are not immediately obvious, it may be necessary to review the available background information from development and adoption of this certification specification (Explanatory Note and Comment/Response Document to the NPA. It may also be helpful to discuss the hazard with the Agency).

c. Step 3: Review the consequences of the hazard(s)

(1) Once the hazard has been identified, it is possible to identify the types of consequences that may occur because of the presence of the hazard. More than one consequence can be attributed for the same hazard. Typical examples of consequences would include, but are not be limited to:
- Incidents where only injuries occurred;
- Accidents where less than 10 % of the passengers died;
- Accidents where 10 % or more passengers died; and
- Accidents where a total hull loss occurred.

(2) The background information from development and adoption of the certification specification may provide useful information regarding the consequences of the hazard the requirement is intended to address.

d. Step 4: Identify the historical and predicted frequency of each consequence

(1) Another source for determining impracticality is the historical record of the consequences of the hazard that led to a certification specification or an amendment to a certification specification. From these data, a frequency of hazard occurrence can be determined. It is important to recognise that the frequency of occurrence may be higher or lower in the future. Therefore, it is also necessary to predict the frequency of future occurrences.

(2) More than one consequence can be attributed for the same hazard. Therefore, when applicable, the combination of consequences and frequencies of those consequences should be considered together.

(3) The background information from development and adoption of the certification specification may provide useful information regarding the frequency of occurrence.

e. Step 5: Determine how effective full compliance with the latest amendment of the certification specification would be at addressing the hazard

(1) When each amendment is promulgated, it is usually expected that compliance with the certification specification would be completely effective at addressing the associated hazard. It is expected that the hazard would be eliminated, avoided, or dealt with. However, in a limited number of situations, this may not be the case. It is also possible that earlier amendment levels may have addressed the hazard but were not completely effective. Therefore, in comparing the benefits of compliance with the existing type-certification basis to the latest amendment level, it is useful to estimate the effectiveness of both amendment levels in dealing with the hazard.

(2) It is recognised that the determination of levels of effectiveness is normally of a subjective nature. These are relative assessments of a qualitative nature that should not be treated as absolute determinations. Therefore, prudence should be exercised when making these determinations. In all cases, it is necessary to document the assumptions and data that support the determination.

(3) The following five levels of effectiveness are provided as a guideline:

(a) Fully effective in all cases.

Compliance with the certification specification eliminates the hazard or provides a means to avoid the hazard completely.

(b) Considerable potential for eliminating or avoiding the hazard.

Compliance with the certification specification eliminates the hazard or provides a means to avoid completely the hazard for all probable or likely cases, but it does not cover all situations or scenarios.

(c) Adequately deals with the hazard.

Compliance with the certification specification eliminates the hazard or provides a means to avoid the hazard completely in many cases. However, the hazard is not eliminated or avoided in all probable or likely cases. Usually this action only addresses a significant part of a larger or broader hazard.

(d) Hazard only partly addressed.

In some cases compliance with the certification specification partly eliminates the hazard or does not completely avoid the hazard. The hazard is not eliminated or avoided in all probable or likely cases. Usually this action only addresses part of a hazard.

(e) Hazard only partly addressed but action has negative side effect.

Compliance with the certification specification does not eliminate or avoid the hazard or may have negative safety side effects. The action is of questionable benefit.

f. Step 6: Determine resource costs and cost avoidance

(1) There is always cost associated with complying with a certification specification. This cost may range from minimal administrative efforts to the resource expenditures that support full scale testing or the redesign of a large portion of an aircraft. However, there are also potential cost savings from compliance with a certification specification. For example, compliance with a certification specification may avoid aircraft damage or accidents and the associated costs to the manufacturer for investigating accidents. Compliance with the latest amendment of a certification specification may also facilitate certification of a product by the competent authority of a third country.

(2) When determining the impracticality of applying a certification specification at the latest amendment level, only the incremental costs and safety benefits from complying with the existing type-certification basis should be considered.

(3) When evaluating the incremental cost, it may be beneficial for the applicant to compare the increase in cost to comply with the latest certification specifications to the cost to incorporate the same design feature in a new aeroplane. In many cases an estimate for the cost of incorporation in a new aeroplane is

provided in the Regulatory Impact Assessment (RIA) by the Agency, which was presented when the corresponding certification specification was first promulgated. Incremental costs of retrofit/incorporation on existing designs may be higher than that for production. Examples of costs may include but are not limited to:

(a) Costs: The accuracies of fleet size projections, utilisation, etc. may be different than that experienced for derivative product designs and must be validated.
- Labour: Work carried out in the design, fabrication, inspection, operation or maintenance of a product for the purpose of incorporating or demonstrating compliance with a proposed action. Non-recurring labour requirements, including training, should be considered.
- Capital: Construction of new, modified or temporary facilities for design, production, tooling, training, or maintenance.
- Material: Cost associated with product materials, product components, inventory, kits, and spares.
- Operating Costs: Costs associated with fuel, oil, fees, and expendables.
- Revenue/Utility Loss: Costs resulting from earning/usage capability reductions from departure delays, product downtime, capability reductions of performance loss due to seats, cargo, range, or airport restrictions.

(b) Cost Avoidance:
- Avoiding cost of accidents, including investigation of accidents, lawsuits, public relations activities, insurance, and lost revenue.
- Foreign Certification: Achieve a singular effort that would demonstrate compliance to the airworthiness standards of most certifying agencies, thus minimising certification costs.

g. Step 7: Document conclusion. Once the information from previous steps has been documented and reviewed, the applicant's position and rationale regarding practicality can be documented. Examples of possible positions would include, but are not limited to:

(1) Compliance with the latest certification specification is necessary. The applicant would pursue the change at the latest amendment level.

(2) Compliance with an amendment level between the existing type-certification basis and the latest amendment would adequately address the hazard at an acceptable cost, while meeting the latest amendment level would be impractical. The applicant would then propose the intermediate amendment level of the certification specification.

(3) The increased level of safety is not commensurate with the increased costs associated with meeting the latest amendment instead of the existing type-certification basis. Therefore, the applicant would propose the existing type-certification basis.

(4) The results of this analysis were inconclusive. Further discussions with the Agency are warranted.

Note: This process may result in a required type-certification basis that renders the proposed modification economically not viable.

3. Examples of how to certify changed aircraft. The following examples are for large aeroplanes and illustrate the typical process an applicant follows. The process will be the same for all product types.

a. Example 1: CS 25.963 (e) Fuel tank access covers

(1) This change is part of a significant large aeroplane change that increases passenger payload and gross weight by extending the fuselage by 20 feet. To accommodate the higher design weights and increased braking certification specification, and to reduce runway loading, the applicant will change the landing gear from a two-wheel to four-wheel configuration; this changes the debris scatter on the wing from the landing gear. The new model aeroplane will be required to comply with the latest applicable certification specifications based on the date of application.

(2) The wing will be strengthened locally at the side of the body and at the attachment of engines and landing gear, but the applicant would not like to alter wing access panels and the fuel tank access covers. Although the applicant recognises that the scatter pattern and impact loading on the wing from debris being thrown from the landing gear will change, he proposes that it would be impractical to redesign the fuel tank access covers.

(3) Step 1: Identify the regulatory change being evaluated

(a) The existing certification basis of the aeroplane that is being changed is CS-25 prior to Amendment 3.
(b) Amendment 3 to CS-25 added the certification specification that fuel tank access covers on large aeroplanes be designed to minimise penetration by likely foreign objects, and be fire resistant.

(4) Step 2: Identify the specific hazard that the certification specification addresses Fuel tank access covers have failed in service due to impact with high-energy objects such as failed tire tread material and engine debris following engine failures. In one accident, debris from the runway impacted a fuel tank access cover, causing its failure and subsequent fire, which resulted in fatalities and loss of the aeroplane. Amendment 3 ensures that all access covers on all fuel tanks are designed or located to minimise penetration by likely foreign objects, and are fire resistant.

(5) Step 3: Review the history of the consequences of the hazard(s)

Occurrences with injuries and with more than 10 % deaths.

(6) Step 4: Identify the historical and predicted frequency of each consequence
(a) In 200 million departures of large jets:
- One occurrence with more than 10 % deaths; and
- One occurrence with injuries.
(b) There is no reason to believe that the future rate of accidents will be significantly different than the historical record.

(7) Step 5: Determine how effective full compliance with the latest amendment of the certification specification would be at addressing the hazard
(a) Considerable potential for eliminating or avoiding the hazard.
(b) Compliance with Amendment 3 eliminates the hazard or provides a means to avoid the hazard completely for all probable or likely cases. However, it does not cover all situations or scenarios.

(8) Step 6: Determine resource costs and cost avoidance
(a) Costs:
- For a newly developed aeroplane, there would be minor increases in labour resulting from design and fabrication.
- There would be a negligible increase in costs related to materials, operating costs, and revenue utility loss.
(b) Cost avoidance:
- There were two accidents in 200 million departures. The applicant believes that it will manufacture more than 2 000 of these aeroplanes or derivatives of these aeroplanes. These aeroplanes would average five flights a day. Therefore, statistically there will be accidents in the future if the hazard is not alleviated. Compliance will provide cost benefits related to avoiding lawsuits, accident investigations, and public relation costs.
- There are cost savings associated with meeting a single type-certification basis for the Agency and foreign regulations.

(9) Conclusion

It is concluded that compliance with the latest certification specification increases the level of safety at a minimal cost to the applicant. Based on the arguments and information presented by the applicant through the Certification Review Item (CRI) process, the Agency determined that meeting the latest amendment would be practical.

b. Example 2: 14 CFR § 25.365 pressurised compartment loads

Note: This example is taken from the FAA certification experience gained before the Agency's start, so references to FAR sections and amendments are kept.

(1) This example is a passenger to freighter conversion STC.
(2) This change affects the floor loads on the airplane as well as the decompression venting.
(3) Step 1: Identify the regulatory change being evaluated
(a) The existing certification basis of the airplane that is being changed includes 14 CFR § 25.365 at Amendment 25-0. The initial release of 14 CFR § 25.365 required that the interior structure of pas-

senger compartments be designed to withstand the effects of a sudden release of pressure through an opening resulting from the failure or penetration of an external door, window, or windshield panel, or from structural fatigue or penetration of the fuselage, unless shown to be extremely remote.

(b) Amendment 25-54 revised 14 CFR § 25.365 to require that the interior structure be designed for an opening resulting from penetration by a portion of an engine, an opening in any compartment of a size defined by 14 CFR § 25.365(e)(2), or the maximum opening caused by a failure not shown to be extremely improbable. The most significant change is the 'formula hole size' requirement introduced into § 25.365(e)(2) at Amendment 25-54.

(c) Amendment 25-71/72 (Amendments 25-71 and 25-72 are identical) extended the requirement to all pressurised compartments, not just passenger compartments, and to the pressurisation of unpressurised areas. Pressurisation of unpressurised areas had previously been identified as an unsafe feature under 14 CFR § 21.21(b)(2).

(d) Amendment 25-87 redefined the pressure differential load factor that applies above an altitude of 45 000 feet. Compliance with Amendment 25-87 is not affected since the airplane does not operate above an altitude of 45 000 feet. The applicant proposes to meet the 'pressurisation into unpressurised areas' requirement introduced in Amendment 25-71/72. The applicant does not propose to comply with the formula hole size requirement introduced in § 25.365(e)(2) at Amendment 25-54.

(4) Step 2: Identify the specific hazard that the regulation addresses

The hazard is a catastrophic structure and/or system failure produced by a sudden release of pressure through an opening in any compartment in flight. This opening could be caused by an uncontained engine failure, an opening of a prescribed size due to the inadvertent opening of an external door in flight, or an opening caused by a failure not shown to be extremely improbable. The opening could be produced by an event that has yet to be identified.

(5) Step 3: Review the history of the consequences of the hazard(s)

Occurrences with injuries, less than 10 % deaths, and more than 10 % deaths.

(6) Step 4: Identify the historical and predicted frequency of each consequence

(a) In 200 million departures of large jets:

- Two occurrences with more than 10 % deaths;
- One occurrence with less than 10 % deaths; and
- One occurrence with injuries.

(b) There is no reason to believe that the future rate of accidents will be significantly different than the historical record.

(7) Step 5: Determine how effective full compliance with the latest amendment of the regulation would be at addressing the hazard

(a) Compliance with the latest amendment eliminates the hazard or provides a means to avoid the hazard completely.

(b) Design changes made to the proposed derivative airplane bring it closer to full compliance with 14 CFR § 25.365 at Amendment 25-54. The original airplane was shown to meet the requirements for a hole size of 1.1 square feet. Amendment 25- 54 would require a hole size of 5.74 square feet, and the current reinforcements for the converted airplane can sustain a hole size of 3.65 square feet in the forward area and 2.65 at the aft area. This is 3.1 and 2.4 times respectively better than the original design condition of Amendment 25-0 and is a significant improvement over the worldwide passenger fleet in service.

(8) Step 6: Determine resource costs and cost avoidance

(a) Costs: There would be savings in both labour and capital costs if compliance were demonstrated to Amendment 25-0 instead of Amendment 25-54. Major modifications to the floor beams would be necessary to meet the formula hole size requirement in Amendment 25-54.

(b) Cost Avoidance:

(1) There were four accidents in 200 million departures. The applicant believes that it will manufacture more than 2 000 of these airplanes or derivatives of these airplanes. These airplanes would average two flights a day. Therefore, statistically there will be accidents in the future if

the hazard is not alleviated. Compliance will provide cost benefits related to avoiding lawsuits, accident investigations, and public relation costs.

(2) There are cost savings associated with meeting a single certification basis for FAA and foreign regulations.

(9) Step 7: Document conclusion regarding practicality.

The design complies with 14 CFR § 25.365 at Amendment 25-0, 25-71/72, and 25-87, and is nearly in full compliance with Amendment 25-54 (and certain aspects of Amendments 25-71/72 and 25-87). The design would adequately address the hazard at an acceptable cost. Therefore, based on arguments of impracticality discussed in an issue paper, the FAA accepts the applicant's proposal to comply with 14 CFR § 25.365 at Amendment 25-0.

Appendix C to GM 21.A.101 The use of service experience in the certification process

21.A.101
GM 21.A.101 Establishment of the type-certification basis of changed aeronautical products
Appendix A. to GM 21.A.101 Classification of Changes
Appendix B to GM 21.A.101 Procedure for evaluating impracticality of applying latest certification specifications to a changed product
Appendix D to GM 21.A.101 Tables and figures to assist CPR understanding
Appendix E to GM 21.A.101 Related Part 21 Requirements

1. Introduction

Service experience may be utilised to support the application of an earlier certification specifications if, in conjunction with the applicable service experience and other compliance measures, the earlier certification specifications provide a level of safety comparable to that provided by the latest certification specifications. It is incumbent on the applicant to provide sufficient substantiation to allow the Agency to make this determination. A statistical approach may be used, subject to the availability and relevance of data, however sound engineering judgement must be used. For service history to be acceptable, the data must be both sufficient and pertinent.

The essentials of the process involve:

a. A clear understanding of the certification specification change and the purpose for the change and hazard addressed;
b. A determination based on detailed knowledge of the proposed design feature;
c. The availability of pertinent and sufficient service experience data, and
d. A comprehensive review of that service experience data.

2. Guidelines

The Certification Review Item (CRI) procedure (either a stand-alone CRI or included in the CRI A-1) would be used and the applicant should provide documentation to support the following:

a. The identification of the differences between the certification specification in the existing basis and the certification specification as amended, and the effect of the change in the certification specification.
b. A description as to what aspect of the latest certification specification the proposed changed product would not meet.
c. Evidence showing that the proposed type-certification basis for the changed product, together with applicable service experience, provides a level of safety consistent with complying with the latest certification specifications.
d. A description of the design feature and its intended function.
e. Data for the product pertinent to the certification specification:

(1) Service experience from such sources as the following:

(a) Accident reports;
(b) Incident reports;
(c) Service Bulletins;
(d) Airworthiness directives;
(e) Repairs;
(f) Modifications;
(g) Flight hours/cycles for fleet leader and total fleet;

(h) World airline accident summary data;
(i) Service Difficulty Reports;
(j) Reports from accident investigation boards;
(k) Warranty, repair and parts usage data.

(2) Show that the data presented represents all relevant service experience for the product, including the results of any operator surveys, and is comprehensive enough to be representative.

(3) Show that the service experience is relevant to the hazard.

(4) Identification and evaluation of each of the main areas of concern, with regard to:
(a) recurring and/or common failure modes;
(b) cause;
(c) probability, by qualitative reasoning; and
(d) measures already taken and their effects.

(5) Relevant data pertaining to aircraft of similar design and construction may be included.

(6) Evaluation of failure modes and consequences through analytical processes. The analytical processes should be supported by:
(a) A review of previous test results;
(b) Additional detailed testing as required; or
(c) A review aircraft functional hazard assessments (FHA) and any applicable system safety assessments (SSA) as required.

f. A conclusion that draws together the data and the rationale.

g. These guidelines are not intended to be limiting, either in setting required minimum elements or in precluding alternative forms of submission. Each case may be different, based on the particulars of the system being examined and the requirement to be addressed.

3. Example: Transport Airplanes: § 25.1141(f) Powerplant controls: Auxiliary Power Unit (APU) Fuel Valve Position Indication

NOTE: This example is taken from FAA certification experience gained prior to the Agency's start, so references are made to FAR sections and amendments.)

a. The following example, for transport airplanes (14 CFR § 25.1141(f) Auxiliary Power Unit (APU) Fuel Valve Position Indication System), illustrates the typical process an applicant follows. The process will be the same for all product types.

b. This example comes from a derivative model transport aeroplane where significant changes were made to the main airframe components, engines and systems, and APU. The baseline airplane has an extensive service history. The example shows how the use of service experience supports a finding that compliance with the latest requirement would not contribute materially to the level of safety, and that application of the existing type-certification basis (or earlier amendment) would be appropriate. The example is for significant derivatives of transport airplanes with extensive service history, and illustrates the process, following the guidelines in this appendix, but does not include the level of detail normally required.

(1) Determine the differences between the requirement in the existing type-certification basis and the requirement as amended, and the effect of the change in the requirement. The existing type-certification basis of the airplane that is being changed is the initial release of part 25. Amendment 25-40 added the requirement 14 CFR §25.1141(f), which mandates that power-assisted valves must have a means to indicate to the flight crew when the valve is in the fully open or closed position, or is moving between these positions. The addressed hazard would be risk of APU fire due to fuel accumulation caused by excessive unsuccessful APU start attempts.

(2) What aspect of the proposed changed product would not meet the latest requirements?

The proposed APU fuel valve position indication system does not provide the flight crew with fuel valve position or transition indication, and, therefore, does not comply with the requirements of 14 CFR §25.1141(f).

(3) Evidence that the proposed type-certification basis for the changed product, together with applicable service experience and other compliance measures provide an acceptable level of safety.

The APU fuel shut-off valve and actuator are unchanged from those used on the current family of airplanes, and have been found to comply with the earlier amendment 25-11 of 14 CFR §25.1141(f). The existing fleet has achieved approximately (#) flights during which service experience of the existing design has been found to be acceptable. If one assumes a complete APU cycle, i.e. start up and shutdown for each flight, the number of APU fuel shut off valve operations would be over 108 cycles, which demonstrates that the valve successfully meets its intended function and complies with the intent of the requirement. In addition, the system design for the changed product incorporates features, which increase the level of functionality and safety.

(4) A description of the design feature and its intended function

The fuel shut off valve, actuator design, and operation is essentially unchanged, with the system design ensuring that the valve is monitored for proper cycling from closed to open at start initiation. If the valve is not in the appropriate position (i.e., closed) then the APU start is terminated, an indication is displayed on the flight deck and any further APU starts are prevented. Design improvements using the capability of the APU Electronic Control Unit (ECU) have been incorporated in this proposed product change. These design changes ensure that the fuel valve indication system will indicate failure of proper valve operation to the flight crew, but the system does not indicate valve position as required by 14 CFR §25.1141(f).

(5) Data for the product pertinent to the requirement

The FAA and applicant record the data in an issue paper (G-1 or a technical issue paper). An issue paper was co-ordinated which included data, or referenced reports, documenting relevant service experience that has been compiled from incident reports, fleet flight hour/cycle data, and maintenance records. The issue paper also discussed existing and proposed design details, failure modes, and analyses showing to what extent the proposed aeroplane complies with the latest amendment of 14 CFR §25.1141. Information is presented to support the applicant's argument that compliance with the latest amendment would not materially increase the level of safety. Comparative data pertaining to aircraft of similar design and construction are also presented.

(6) Conclusion

Conclusion, drawing together the data and rationale, is documented in the G-1 issue paper. The additional features incorporated in the APU fuel shut-off valve will provide a significant increase in safety to an existing design with satisfactory service experience. The applicant proposes that compliance with the latest amendment would not materially increase the level of safety, and that compliance with 14 CFR §25.1141 at amendment 25-11 would provide an acceptable level of safety for the proposed product change.

Appendix D to GM 21.A.101 Tables and figures to assist CPR understanding

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Figure 3: Affected and Unaffected area

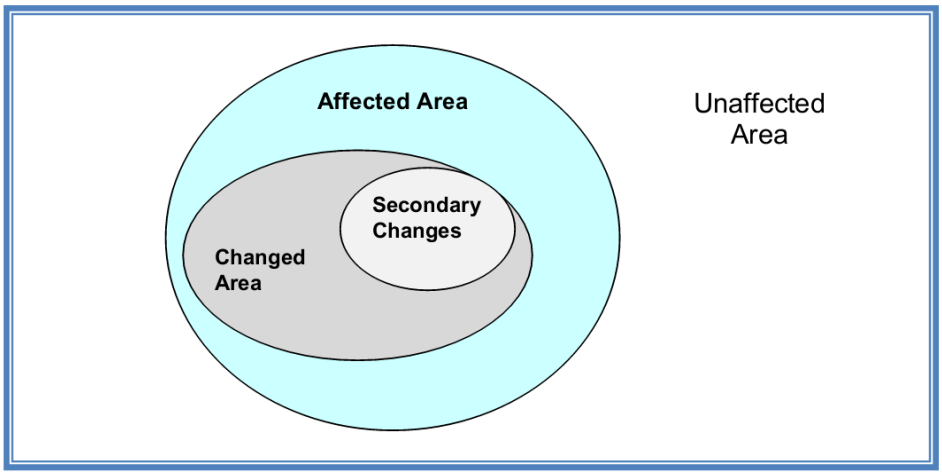

Figure 4: Example of Related and Unrelated changes -Increase in Maximum Number of Passengers

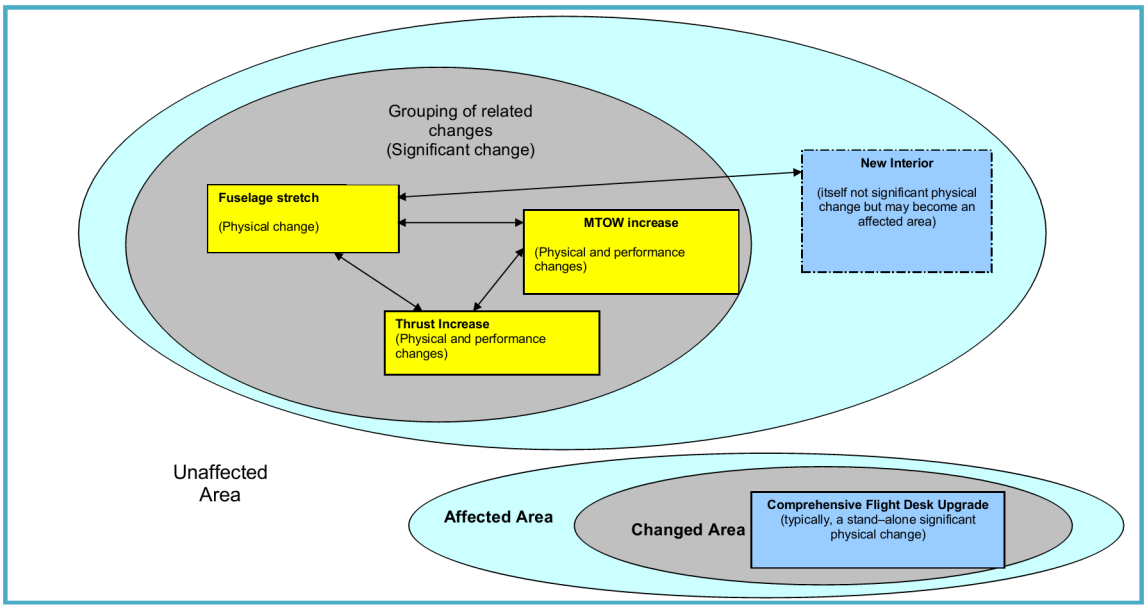

Figure 5: Establishing TC basis for Substantial, Significant and Not significant changes according to 21.A.101 (a) and (b)

<table>
<tr><td>Substantial
(21.A.19)</td><td colspan="3">Significant
(21.A.101) (a) and (b))</td><td colspan="2">Not significant
(21.A.101)(b)(1)</td></tr>
<tr><td rowspan="3">Full product
New demonstration of compliance for full changed product required.
Previously approved type design and compliance data may be allowed if valid for the changed product.</td><td colspan="3">Affected area
(Changed areas and/or physically unchanged but functionally affected areas)
New demonstration of compliance is required</td><td rowspan="3">Unaffected area
No new demonstration of compliance is required.
Unaffected area continues to comply with the existing TC basis.
The applicant may elect to comply with later certification specifications.</td><td rowspan="3">Affected area
(Changed areas and/or physically unchanged but functionally affected areas).
New demonstration of compliance is required. The applicant may propose a certification basis using an earlier amendment but not earlier than the existing TC basis.</td><td rowspan="3">Unaffected area
No new demonstration of compliance is required.
Unaffected area continues to comply with the existing TC basis.
The applicant may elect to comply with later certification specifications.</td></tr>
<tr><td colspan="2">Compliance with the latest amendment materially contributes to safety</td><td>No material contribution to safety</td></tr>
<tr><td>(Practical)</td><td>Impractical
The applicant may propose a certification basis using an earlier amendment but not earlier than the existing TC basis.</td><td>Secondary and not secondary
The applicant may propose a certification basis using an earlier amendment but not earlier than the existing TC basis.</td></tr>
<tr><td colspan="6">TC basis proposed by the Applicant</td></tr>
<tr><td>Certification specifications of the latest amendment
+ elects to comply</td><td colspan="2">Certification specifications of an earlier amendment
+ elects to comply</td><td>Elects to comply (later than the existing TC basis</td><td>An earlier amendment
+ elects to comply</td><td>Elects to comply (later than the existing TC basis)</td></tr>
<tr><td colspan="6">TC basis recorded by the Agency</td></tr>
<tr><td>Certification specifications of the latest amendment + SC
(if the latest amendment is not adequate) + elects to comply</td><td>Certification specifications of the proposed amendment
or,
if not adequate, the first appropriate later amendment (if available)
or
SC + elects to comply</td><td>Certification specifications of the proposed amendment (if adequate)
or,
if not adequate, the first appropriate later amendment (if available)
or
SC + elects to comply</td><td>Elects to comply as proposed</td><td>The proposed amendment (if adequate) or
First appropriate later amendment (if available)
or
SC + elects to comply</td><td>Elects to comply as proposed</td></tr>
</table>

Figure 6: Establishing TC basis for a change on Excepted Products (21.A.101(c))

<table>
<tr><td colspan="4">Affected area
(Changed areas and/or physically unchanged but functionally affected areas)
New demonstration of compliance is required</td><td>Unaffected area
No new demonstration of compliance is required.
Unaffected area continues to comply with the existing TC basis.
The applicant may elect to comply with later certification specifications.</td></tr>
<tr><td colspan="5">TC basis proposed by the Applicant</td></tr>
<tr><td colspan="4">The existing TC basis + elects to comply</td><td>Elects to comply (later than the existing TC basis)</td></tr>
<tr><td colspan="3">Found by the Agency 'significant in an area'</td><td>(Not significant in an area)</td><td rowspan="2"></td></tr>
<tr><td colspan="2">Compliance with a later amendment materially contributes to safety
(Practical) | Impractical</td><td>No material contribution to safety</td><td></td></tr>
<tr><td colspan="5">TC basis recorded by the Agency</td></tr>
<tr><td>Certification specifications of a later amendment designated by the Agency + SC + elects to comply</td><td>The existing TC basis or, if not adequate, the first appropriate later amendment (if available)
or
(if not) SC + elects to comply</td><td>The existing TC basis or, if not adequate, the first appropriate later amendment (if available)
or
(if not) SC +elects to comply</td><td>The existing TC basis
or,
if not adequate, the first appropriate later amendment (if available)
or
(if not) SC +elects to comply</td><td>Elects to comply (later than the existing TC basis)</td></tr>
</table>

Appendix E to GM 21.A.101 Related Part 21 Requirements

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21.A.16B Special conditions
21.A.17 Type-certification basis
21.A.18 Designation of applicable environmental protection requirements and certification specifications
21.A.19 Changes requiring a new type-certificate
21.A.21 Issue of a type-certificate
21.A.23 Issue of a restricted type-certificate
21.A.90A Scope
21.A.91 Classification of changes in type design
21.A.93 Application
21.A.95 Minor changes
21.A.97 Major changes
21.A.101 Designation of applicable certification specifications and environmental protection requirements
21.A.103 Issue of approval
21.A.111 Scope
21.A.113 Application for a supplemental type-certificate
21.A.114 Demonstration of compliance
21.A.115 Issue of a supplemental type-certificate
21.A.117 Changes to that part of a product covered by a supplemental type-certificate
21.A.604 ETSO Authorisation for an auxiliary power unit (APU)

GM No 1 to 21.A.101(g) Establishment of the operational suitability data (OSD) certification basis of changed type certificates (TCs)

21.A.101

This GM provides guidance on the application of 21.A.101(g) in order to determine the applicable OSD certification basis in accordance with 21.A.101(a), (b), (c), (d) and (f) for changes to the OSD of type-certified aircraft.

1. Minor changes
   Minor changes to the OSD are automatically considered not significant under 21.A.101(b).
2. Major changes
   a. If the design change that triggered the change to the OSD constituent is classified as non-significant, the change to the OSD constituent is also non-significant.
   b. If the design change that triggered the change to the OSD constituent is classified as significant, the change to the OSD constituent should comply with the latest amendment of the applicable CS unless the exceptions of 21.A.101(b)(3) apply or unless the OSD change can be classified as minor as per 21.A.91. The guidance of GM 21.A.101 Chapter 3, Paragraph 10, regarding the exceptions ‘impractical’ and ‘not contributing materially to the level of safety’, can be applied by analogy and as far as it is applicable to OSD changes.
   c. Stand-alone changes to an OSD constituent are considered to be non-significant.
   d. When a new OSD constituent is added or required to be added, it should comply with the latest amendment of the applicable certification specification (CS).
   e. In accordance with Article 7(a)(3) of Regulation (EU) No 748/2012, the Operational Evaluation Board (OEB) reports and master minimum equipment lists (MMELs), issued in accordance with the Joint Avi-

ation Authorities (JAA) procedures or by the Agency before the entry into force of Regulation (EU) No 748/2012, are deemed to constitute the OSD approved in accordance with 21.A.21(e).
The original procedures, guidance material (GM), advisory circular joint (ACJ) and/or acceptable means of compliance (AMC), advisory material joint (AMJ) material, that were used to establish the original documents (JAA/Agency MMELs or OEB reports), are deemed to be the original certification basis for these documents.

g. 21.A.101(c) provides an exception from the requirements of 21.A.101(a) for a change to OSD of certain aircraft under a specified maximum weight. If an applicant applies for a change to OSD for an aircraft (other than rotorcraft) of 2 722 kg (6 000 lbs) or less maximum weight, or for a non-turbine-powered rotorcraft of 1 361 kg (3 000 lbs) or less maximum weight, the applicant can demonstrate that the changed OSD complies with the OSD certification basis incorporated by reference in the TC. The applicant can also elect to comply, or may be required to comply, with a later amendment. See also Chapter 4, Section 2 (GM No 1 to 21.A.101) for specific guidance on this requirement.

Note: Refer to GM No 1 to 21.A.15(d) for applicability of OSD to aircraft other-than-complex motor-powered aeroplanes.

<ED Decision 2016/007/R new GM>

GM No 1 to 21.A.103, 21.A.115 and 21.B.70 Approval of changes to type certificates (TCs)

21.A.103
21.A.115
21.B.70

The requirement for the Agency in 21.B.70 mainly addresses stand-alone changes to OSD. For such stand-alone changes, there is a separate classification process (see GM 21.A.91), and the way to administer the changes depends on the extent of the change, but normally, an update of the type certificate data sheet TCDS is not required. However, the requirement can also be applied to combinations of design changes and OSD changes.

Changes to TCs can comprise several interrelated changes to different components of the TC. For example, a change to the cockpit design may trigger a change to the flight crew data (FCD), being part of OSD, and, therefore, included in the TC.

All interrelated changes should ultimately be approved together under a single approval. However, before issuing such a comprehensive approval, it is possible that different processes are used for the different parts of the change.

The complete change can be split up in a change to the type design and changes to the OSD constituents. Each part can be classified as a minor or major change separately (see GM 21.A.91).

- In case all parts of the change are classified as minor, the design organisation approval (DOA) holder can approve the whole change.
- In case one or more parts of the change is/are classified as major, while the associated part(s) of the change is/are classified as minor, the approved design organisation can propose to the Agency not to verify the classification and the part(s) of the change classified as minor in accordance with its privilege under 21.A.263(b)(2) or (3). The Agency should then accept the part(s) of the change classified as minor without further verification. Once it is satisfied that compliance has been demonstrated for the part(s) of the change classified as major, the Agency can then issue the complete change approval or supplemental type certificate (STC).
- In case all parts of the change are classified as major, the Agency will issue the approval for the whole change once it is satisfied that compliance has been demonstrated.

<ED Decision 2016/007/R new GM>

Subpart E - Supplemental type-certificates

GM No1 21.A.112B Demonstration of capability for supplemental type-certificate (STC) cases

21.A.112B

See also AMC 21.A.14(b) for the details of the alternative procedures.

The following examples of major changes to type design (ref: 21.A.91) are classified in two groups. Group 1 contains cases where a design organisation approved under Part 21 Subpart J ('Subpart J DOA') should be required, and Group 2 cases where the alternative procedure may be accepted. They are typical examples but each STC case should be addressed on its merits and there would be exceptions in practice. This classification is valid for new STCs, not for evolution of STCs, and may depend upon the nature of the STC (complete design or installation).

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-23 (products where J DOA is required for TC)			
Notes : * STC which leads to reassess the loads on large parts of primary structure should be in group 1. * 2/1 means that an assessment of consequences in terms of handling qualities, performance or complexity of demonstration of compliance may lead to classification in group 1.			
	Aircraft		
		Conversion to tail wheel configuration	1
		Auxiliary fuel tank installations	2/1
		Glass fibre wing tips	2/1
		Fairings: nacelle, landing gear	2
		Gap seals: aileron, flap, empenage, doors	2
		Vortex generators	2/1
		Spoiler installation	1
		Increase in MTOW	1

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-23 (products where J DOA is required for TC)			

Notes : * STC which leads to reassess the loads on large parts of primary structure should be in group 1. * 2/1 means that an assessment of consequences in terms of handling qualities, performance or complexity of demonstration of compliance may lead to classification in group 1.			
	Structures		
		Stretcher installation	2
		Change to seating configuration	2
		Windshield replacement (heated, single piece, etc.)	2
		Light weight floor panels	2
		Ski installations	2/1

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-23 (products where J DOA is required for TC)			
Notes : * STC which leads to reassess the loads on large parts of primary structure should be in group 1. * 2/1 means that an assessment of consequences in terms of handling qualities, performance or complexity of demonstration of compliance may lead to classification in group 1.			
	Propulsion		
		Engine model change	1
		Fixed pitch propeller installation	2
		Constant speed propeller installation	2/1
		Installation of exhaust silencer	2
		Installation of Graphic engine monitor	2
		Installation of fuel flow meter	2
		Accessory replacement (alternator, magnetos, etc.)	2
		Inlet modifications: oil cooler; induction air	2

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1

CS-23 (products where J DOA is required for TC)			
Notes : * STC which leads to reassess the loads on large parts of primary structure should be in group 1. * 2/1 means that an assessment of consequences in terms of handling qualities, performance or complexity of demonstration of compliance may lead to classification in group 1.			
	Equipment		
		Avionics upgrades (EFIS, GPS, etc.)	2/1
		Engine instrument replacements	2
		Carburettor ice detection system	2
		Autopilot system installation	1
		Wing tip landing light; recognition lights	2
		WX radar installation	2
		Aeromedical system installations	2
		De- and anti-ice system installations	1
		Emergency power supply installations	2

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-25			
	Cabin Safety		
Note : Basically all changes related to cabin configuration should be in Group 2.		Cabin layout (installation of seats (16G), galleys, single class or business / economy class, etc.)	2
		Floor path marking	2
		Crew rest compartment	1
		Change of cargo compartment classification (from class D to class C)	1

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1

CS-25			
	Structure		
Note : STC which leads to reassess the loads on large parts of primary structure should be in Group 1.		Cargo door	1
		Change from Passenger to Freighter configuration	1

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-25			
	Avionics		
Notes : For CS-25 products, the existence of ETSO is not taken into account for the classification ; Impact on aircraft performance, and influence of aircraft performance are criteria to assess the classification ; Subjective assessment of human factors is considered for determination of classification.		CVR	2
		VHF	2
		NAV (ADF, VOR, GPS, BRNAV)	2
		Autopilot, HUD, EFIS, FMS	1
		DFDR	2/1
		Meteo radar	2
		ILS Cat 3	1
		RVSM	1
		TCAS, EGPWS	1
		GPWS	2

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-25			
	Powerplant		

	Auxiliary fuel tanks	1
	Thrust Reverser system	1
	Hushkit	1
	Fire detection	1
	Fuel gauging	1
	Change of Engine or Propeller	1

Product	Discipline	Kind of STC	Group
All aircraft			
	OSD		
		Major stand-alone change to any OSD constituent	1
CS-27 or 29	All disciplines		
Note : 2/1 means that an assessment of consequences in terms of handling qualities and performance may lead to classification in Group		Main rotor or tail rotor blades replacement	1
		Autopilot	1
		Engine type change	1
		GPS installation	2
		Jettisonable overhead raft installation	2
		Utility basket installation	2/1
		Nose or side mount camera installation	2/1
		Passenger access step installation	2/1
		Protection net & handle installation (parachuting)	2
		VIP cabin layout	2
		Navigation system installation	2
		Fuel boost pump automatic switch-on installation	2
		Decrease of maximum seating capacity	2
		Agricultural spray kit installation	2/1
		Long exhaust pipe installation	2
		Flotation gear installation	2/1
		Wipers installation	2
		Engine oil filter installation	2
		Skid gear covering installation	2/1
		Gutter installation (top pilot door)	2
		Cable cutter installation	2
		Auxiliary fuel tank fixed parts installation	2
		Cabin doors windows replacement	2
		Radio-altimeter aural warning installation	2
		Stand-by horizon autonomous power supply	2
		Fire attack system	2/1
		Hoisting system installation	2/1

	External loads hook installation	2
	Emergency flotation gear installation	2/1
	Heating/demisting (P2 supply)	2

<ED Decision 2016/007/R table additions, numbering of GM>

AMC 21.A.114 Compliance demonstration process for Supplemental Type-Certificate

AMC 21.A.114

1. AMC/GM to 21.A.20 should be used for a supplemental type-certificate.
2. For major changes approved under a supplemental type-certificate and not requiring long and complex compliance demonstration activities, a certification programme, as described in AMC 21.A.20(b), can be submitted with the application in a simplified format. The certification programme should contain at least the following elements:
   - Purpose of change
   - Description of change
   - Applicability
   - Applicable certification specifications, special conditions, equivalent safety findings and environmental protection requirements
   - The description on how compliance will be demonstrated, with selected means of compliance (see appendix to AMC 21.A.20(b) for the codes to be used) and reference to compliance documents
   - As appropriate, the involvement of the type-certificate holder of the product on which the STC is proposed (see 21.A.113 and 115).
   - If relevant, the delivery schedule of compliance documents.

Subpart F - Production without production organisation approval

GM No. 1 to 21.A.121 Applicability - Individual product, part or appliance

21.A.121

In this context, 'demonstrating the conformity with the applicable design data of a product, part and appliance' means that conformity with the applicable design data has to be established and shown for each and every product, part or appliance.

GM No. 2 to 21.A.121 Applicability - Applicable design data

21.A.121

Applicable design data is defined as all necessary drawings, specifications and other technical information provided by the applicant for, or holder of a design organisation approval, TC, STC, approval of repair or minor change design, or ETSO authorisation (or equivalent when Part 21 Section A Subpart F is used for production of products, parts or appliances, the design of which has been approved other than according to Part 21), and released in a controlled manner to the manufacturer producing under Part 21 Subpart F. This should be sufficient for the development of production data to enable manufacture in conformity with the design data.

Prior to issue of the TC, STC, approval of repair or minor change design or ETSO authorisation, or equivalent, design data is defined as 'not approved', but parts and appliances may be released with an EASA Form 1 as a certificate of conformity.

After issue of the TC, STC, approval of repair or minor change or ETSO authorisation, or equivalent, this design data is defined as 'approved' and items manufactured in conformity are eligible for release on an EASA Form 1 for airworthiness purposes.

For the purpose of Subpart F of Part 21 the term ‘applicable design data’ includes, in the case of engines and when applicable, the information related to the applicable emissions production cut-off requirement.

<ED Decision 2013/001/R last paragraph added>

AMC No. 1 to 21.A.122 Eligibility - Link between design and production

21.A.122

An 'arrangement' is considered suitable if it is documented and satisfies the competent authority that co-ordination is satisfactory.

To achieve satisfactory co-ordination the documented arrangements must at least define the following aspects irrespective of whether the design organisation and the person producing or intending to produce under Part 21 Subpart F are separate legal entities or not:

1 The responsibilities of a design organisation which assure correct and timely transfer of up-to-date applicable design data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.);

2 The responsibilities and procedures of the manufacturer for receiving, managing and using the applicable design data provided by the design organisation.

3 The responsibilities and procedures of the manufacturer for developing, where applicable, its own manufacturing data in compliance with the applicable design data package.

4 The responsibilities of the manufacturer to assist the design organisation in dealing with continuing airworthiness matters and for required actions (e.g., traceability of parts in case of direct delivery to users, retrofitting of modifications, traceability of processes' outputs and approved deviations for individual parts as applicable, technical information and assistance, etc.);

5 The scope of the arrangements covering Subpart F requirements, in particular: 21.A.126(a)(4) and 21.A.129(d) and (f) and any associated GM or AMC.

6 The responsibilities of the manufacturer, in case of products prior to type certification to assist a design organisation in demonstrating compliance with CS (access and suitability of production and test facilities for manufacturing and testing of prototype models and test specimen);

7 The procedures to deal adequately with production deviations and non-conforming parts;

8 The means to achieve adequate configuration control of manufactured parts, to enable the manufacturer to make the final determination and identification for conformity or airworthiness release and eligibility status;

9 The identification of responsible persons/offices who controls the above.

10 The acknowledgment by the holder of the TC/STC/repair or change approval/ETSO authorisation that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved.

In many cases the person producing or intending to produce under Part 21 Subpart F may receive the approved design data through an intermediate production organisation. This is acceptable provided an effective link between the design approval holder and the production organisation can be maintained to satisfy the intent of 21.A.122.

When the design organisation and the manufacturer are two separate legal entities a Direct Delivery Authorisation should be available for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

Where there is no general agreement for Direct Delivery Authorisation, specific permissions may be granted (see AMC 21.A.4).

AMC No. 2 to 21.A.122 Eligibility - Link between design and production

21.A.122

In accordance with AMC No.1 to 21.A.122 the person producing or intending to produce under Part 21 Subpart F should demonstrate to the authority that it has entered into an arrangement with the design organisation. The arrangement must be documented irrespective of whether the two organisations are separate legal entities or not.

The documented arrangement must facilitate the person producing or intending to produce under Part 21 Subpart F to demonstrate compliance with the requirement of 21.A.122 by means of written documents agreed.

In the case where the design organisation and the person producing or intending to produce under Part 21 Subpart F are part of the same legal entity these interfaces may be demonstrated by company procedures accepted by the competent authority.

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

Arrangement Sample Form

ARRANGEMENT in accordance with 21.A.122	
The undersigned agree on the following commitments:	Relevant interface procedures
The design organisation [NAME] takes responsibility to: - assure correct and timely transfer of up-to-date applicable design data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.) to the person producing under Part 21 Subpart F [NAME] - provide visible statement(s) of approved design data.	
The person producing under Part 21 Subpart F [NAME] takes responsibility to - assist the design organisation [Name] in dealing with continuing airworthiness matter and for required actions - assist the design organisation [NAME] in case of products prior to type certification in demonstrating compliance with certification specifications - develop, where applicable, its own manufacturing data in compliance with the airworthiness data package.	
The design organisation [NAME] and the person producing under Part 21 Subpart F [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 manufacturer producing under Part 21 Subpart F. - achieve adequate configuration control of manufactured parts, to enable the manufacturer producing under Part 21 Subpart F to make the final determination and identification for conformity.	
The scope of production covered by this arrangement is detailed in [DOCUMENT REFERENCE/ATTACHED LIST]	

[When the design organisation is not the same legal entity as the manufacturer producing under Part 21 Subpart F] Transfer of approved design data: The TC/STC/ETSO authorisation holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved by the competent authority and therefore the parts and appliances manufactured in accordance with these data and found in a condition for safe operation may be released certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation.
[When the design organisation is not the same legal entity as the manufacturer producing under Part 21 Subpart F] **Direct Delivery Authorisation:** This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

For the [NAME of the design organisation/DOA holder] Date: Signature: xx.xx.xxxx ([NAME in block letters])	For the [NAME of the person producing under Part 21 Subpart F] Date: Signature: xx.xx.xxxx ([NAME in block letters])

Instructions for completion:

Title: The title of the relevant document must clearly indicate that it serves the purpose of a design/production interface arrangement in accordance with 21.A.122.

Commitment: The document must include the basic commitments between the design organisation and the manufacturer producing under Part 21 Subpart F as addressed in AMC 21.A.4 and AMC No. 1 to 21.A.122.

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

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

Transfer of approved design data: Identify the relevant procedures for the transfer of the applicable design data required by 21.A.122 and AMC No. 1 to 21.A.122 from the design organisation to the person producing under Part 21 Subpart F. The means by which the design organisation advises the person producing under Part 21 Subpart F whether such data is approved or not approved must also be identified (ref. 21.A.4 / AMC 21.A.4).

Direct Delivery Authorisation: Where the design organisation and the person producing under Part 21 Subpart F are separate legal entities the arrangement must clearly identify whether authorisation for direct delivery to end users is permitted or not.

Where any intermediate production/design organisation is involved in the chain between the original design organisation and the person producing under Part 21 Subpart F, evidence must be available that this intermediate organisation has received authority from the design organisation to grant Direct Delivery Authorisation.

Signature: AMC No. 1 to 21.A.122 requests the identification of the responsible persons/offices who control the commitments laid down in the arrangement. Therefore the basic document must be signed mutually by the authorised representatives of the design organisation and the manufacturer producing under Part 21 Subpart F in this regard.

GM 21.A.124(a) Application - Application form

21.A.124(a)

EASA Form 60 (see AMC 21.B.120(c)(1)) should be obtained from the competent authority and completed by the applicant.

An application may be accepted from:

- An individual applying on his or her own behalf, or
- In the case of an organisation, an individual with the authority to make agreements on behalf of the organisation.

The completed form should be forwarded to the competent authority.

GM 21.A.124(b)(1)(i) Applicability - Inappropriate approval under Subpart G

21.A.124(b) (1)(i)

The issue of a letter of agreement of production under Part 21 Subpart F may be agreed by the competent authority when:

1 The applicant produces or intends to produce aeronautical products, parts and/or appliances intended for air-borne use as part of a type-certificated product (this excludes simulators, ground equipment and tools), and

2 The competent authority determines that Part 21 Section A Subpart G would be inappropriate, and consequently Part 21 Section A Subpart F applies. The main difference between Part 21 Section A Subparts G and F is that Subpart G requires the existence of a Quality System which provides the competent authority with the necessary confidence to grant to the manufacturer the privileges of certifying its own production. There are situations where a Quality System, including independent monitoring and continuous internal evaluation functions, is not justified and /or feasible. In making the determination that Subpart F may apply, the competent authority may take into account one or a combination of parameters such as the following:
   - no flow production (infrequent or low volume of production).
   - simple technology (enabling effective inspection phases during the manufacturing process).
   - very small organisation.

GM 21.A.124(b)(1)(ii) Certification or approval needed in advance of the issue of a POA

21.A.124(b) (1)(ii)

In cases where Part 21 Section A Subpart G is applicable, but when some time is needed for the organisation to achieve compliance with Subpart G, i.e., to establish the necessary documented quality system, the competent authority may agree to use Part 21 Section A Subpart F for a limited period (transient phase).

In cases where Part 21 Section A Subpart G is applicable, such as to produce ETSO articles, a letter of agreement to produce under Part 21 Subpart F should not be given unless an application has been made for organisation approval under Subpart G, and reasonable progress is being made towards compliance with Subpart G. Long-term production under Part 21 Subpart F will not be permitted.

GM 21.A.124(b)(2) Application - Minimum information to include with the application

21.A.124(b) (2)(

At this early stage, provision of the complete manual is not necessary, but at least the following items should be covered:

1 Table of Contents of the Manual (including list of existing inspection system documents or procedures)
2 Description of items to be manufactured (including intended quantities /deliveries)
3 List of possible suppliers
4 General description of facilities
5 General description of production means
6 Human resources

GM No. 1 to 21.A.125A Letter of agreement - Meaning of individual

21.A.125A

'Individual' means that each part number or type of item (i.e., product, part or appliance) to be produced should be specifically referenced, either directly or through a referenced capability list, in the letter of agreement from the competent authority. The letter may also specify any limitation in the production rate.

GM No. 1 to 21.A.125A(b) Letter of agreement - Contents of the Manual

21.A.125A(b)

The manual referred in 21.A.125A(b) should include, at least the following information:

1 Declaration by the applicant of undertaking in respect of
   1.1 the requirements defined in Part 21 Section A Subpart F
   1.2 the procedures contained in the manual and in the documentation mentioned herein
   1.3 every legal provision laid down for the carrying on of the business activities (statutory declaration).

2 Declaration by the applicant certifying the conformity of the manual to the requirements defined in Part 21 Section A Subpart F
3 Jobs, power and responsibilities of the accountable personnel
4 Organisation chart, if required by the competent authority
5 Description of the resources, including human resources, with an indication of the personnel qualification criteria
6 Description of location and equipment
7 Description of the scope of work, the production processes and techniques, and reference to the 'capability list'
8 Communications with the competent authority, and specifically those required by 21.A.125A(c)
9 Assistance and communication with the design approval holder, and the means of compliance with 21.A.125A (c)
10 Amendments to the Manual
11 Description of the Inspection System (including test, see GM No. 2 to 21.A.125A(b), and 21.A.127 and 21.A.128), and the procedures to meet 21.A.126 and associated GM
12 List of suppliers
13 Issuing of the Statement of Conformity and competent authority inspection for validation

If the information is listed in the Manual in a different order a cross-reference to the above list should be made available in the Manual.

GM No. 2 to 21.A.125A(b) Letter of agreement - Production Inspection System: Functional Tests

21.A.125A(b)

All items produced should be subject to inspection to be carried out at suitable phases which permit an effective verification of conformity with the design data.

These inspections may provide for the execution of tests to measure performances as set out in the applicable design data.

Considerations of complexity of the item and/or its integration in the next level of production will largely determine the nature and time for these tests, for example:

- appliances - will require full functional testing to the specifications
- parts - will at least require basic testing to establish conformity, but due allowance may be made for further testing carried out at the next level of production
- material - will require verification of its stated properties.

GM 21.A.125A(c) Letter of agreement - Assistance

21.A.125A(c)

The competent authority should be provided with material which defines the means of providing assistance as required by 21.A.125A(c). Suitable descriptive material should be included in the Manual, as described in GM No. 1 to 21.A.125A(b).

GM No. 1 to 21.A.125B(a) Uncontrolled non-compliance with applicable design data

21.A.125B(a)

An uncontrolled non-compliance with applicable design data is a non-compliance:

a) that cannot be discovered through systematic analysis or
b) that prevents identification of affected products, parts, appliances, or material.

GM No. 2 to 21.A.125B(a) Examples for level one findings

21.A.125B(a)

Examples for level 1 findings are non-compliances with any of the following points, that could affect the safety of the aircraft:

21.A.126, 21.A.127, 21.A.128, 21.A.129.

It should be anticipated that a non-compliance with these points is only considered a level one finding when objective evidence has been found that this finding is an uncontrolled non-compliance that could affect the safety of the aircraft.

GM 21.A.126 Production Inspection System

21.A.126

GM 21.A.126 (a) and (b) have been developed for persons producing under Part 21 Section A Subpart F on the long term basis as defined in 21.A.124(b)(1)(i).

For those persons producing under Part 21 Section A Subpart F as a transient phase under 21.A.124(b)(1)(ii), compliance with 21.A.126 may also be demonstrated to the satisfaction of the competent authority by using the equivalent Part 21 Section A Subpart G AMC/GM.

GM 21.A.126(a)(1) Production Inspection System - Conformity of supplied parts, appliances and material

21.A.126(a)(1)

1. The person producing under Subpart F is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity, as appropriate, of raw materials, subcontracted works, and supplied products, parts, appliances or material, whether to be used in production or delivered to customers as spare parts. This responsibility also includes BFE (Buyer Furnished Equipment) items.
2. Control may be based upon use of the following techniques, as appropriate:
   - 2.1 first article inspection, including destruction if necessary, to verify that the article conforms to the applicable data for new production line or new supplier,
   - 2.2 incoming inspections and tests of supplied parts or appliances that can be satisfactorily inspected on receipt,
   - 2.3 identification of incoming documentation and data relevant to the showing of conformity to be included in the certification documents,
   - 2.4 any additional work, tests or inspection which may be needed for parts or appliances which are to be delivered as spare parts and which are not subject to the checks normally provided by subsequent production or inspection stages.
3. The person producing under Part 21 Subpart F may rely upon an EASA Form 1 issued in accordance with Part 21 if provided as evidence of conformity with applicable design data

For suppliers not holding a POA the inspection system of the person producing under Part 21 Subpart F should establish a system for control of incoming materials and bought or subcontracted items which provides for inspections and tests of such items by the person producing under Part 21 Subpart F at the supplier's facility, if the item cannot or will not be completely inspected upon receipt.

GM 21.A.126(a)(2) Production Inspection System - Identification of incoming materials and parts

21.A.126(a)(2)

All parts and materials coming from external parties should be identified and inspected to ascertain that they have not been damaged during transport or unpacking, that the incoming parts and materials have the appropriate and correct accompanying documentation and that the configuration and condition of the parts or materials is as laid down in that documentation.

Only on completion of these checks and of any incoming further verifications laid down in the procurement specification, may the part or material be accepted 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.

GM No. 1 to 21.A.126(a)(3) Production Inspection System - List of specifications

21.A.126(a)(3)

It is the responsibility of:

1 The designer, to define all necessary processes, techniques and methods to be followed during manufacture (21.A.31) and this information will be provided as part of the applicable design data.

2 The manufacturer, to ensure that all processes are carried out strictly in accordance with the specifications provided as part of the applicable design data.

GM No. 2 to 21.A.126(a)(3) Production Inspection System - Means of checking of the production processes

21.A.126(a)(3)

The Production Inspection System should be provided with appropriate means of checking that production processes, whether performed by the person producing under Part 21 Subpart F or by sub-contractors under its control, are carried out in accordance with applicable data, including:

1 A system for the control and authorised amendment of data provided for the production, inspection and test to ensure that it is complete and up-to-date at the point of use

2 Availability of personnel with suitable qualification, experience, and training for each required production, inspection, and test task. Special attention should be paid to tasks requiring specialised knowledge and skill, e.g., NDT/NDI, welding...

3 A working area 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

4 Equipment and tools sufficient to enable all specified tasks to be accomplished in a safe and effective manner without detrimental effect on the items under production. Calibration control of equipment and tools which affect critical dimensions and values must demonstrate compliance with, and be traceable to, recognised national or international standards.

GM 21.A.126(a)(4) Production Inspection System - Applicable design/production data procedures

21.A.126(a)(4)

1 When a person producing under Part 21 Subpart F is developing its own manufacturing data from the design data package delivered by a Design holder, procedures should demonstrate the correct transcription of the original design data.

2 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, parts, appliances and materials. The procedure should also define the traceability of such data to each individual product, part, appliance or material for the purpose of stating the condition for safe operation and for issuing a Statement of Conformity.

3 During execution, all works should be accompanied by documentation giving either directly or by means of appropriate references, the description of the works as well as the identification of the personnel in charge of inspection and execution tasks for each of the different work phases.

GM 21.A.126(b)(1) Production Inspection System - Inspection of parts in process

21.A.126(b)(1)

The purpose of the Production Inspection System 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 the specification.

During the manufacturing process, each article should be inspected in accordance with a plan which 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). A copy of the plan should be included in, or referenced by, the manual required by 21.A.125A(b).

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.

GM 21.A.126(b)(2) Production Inspection System - Suitable storage and protection

21.A.126(b)(2)

1. Storage areas should be protected from dust, dirt, or debris, and adequate blanking and packaging of stored items should be practised.
2. All parts should be protected from extremes of temperatures and humidity and, where needed, temperature-controlled or full air-conditioned facilities should be provided.
3. Racking and handling equipment should be provided such as to allow storage, handling and movement of parts without damage.
4. 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.
5. 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.
6. Procedures should be in place to maintain and record stored parts identities and batch information.
7. Access to storage areas should be restricted to authorised personnel who are fully trained to understand and maintain the storage control arrangements and procedures.
8. Provisions should be made for segregated storage of non-conforming items pending their disposition (see GM 21.A.126(b)(4)).

GM 21.A.126(b)(3) Production Inspection System - Use of derived data instead of original design data

21.A.126(b)(3)

Where derived data, e.g., worksheets, process sheets, fabrication/inspection instructions, etc., is used instead of original design drawings, documents identification and control procedures should be used to ensure that the documentation in use is always accurate and current.

GM 21.A.126(b)(4) Production Inspection System - Segregation of rejected material

21.A.126(b)(4)

All materials and parts which have been identified at any stage in the manufacturing process as not conforming to the specific working and inspection instructions must 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 restricted access segregated area until an appropriate disposition is determined in accordance with 21.A.126(b)(5).

GM 21.A.126(b)(5) Production Inspection System - Engineering and manufacturing review procedure

21.A.126(b)(5)

1. The procedure should permit to record the deviation, to present it to the Design holder under the provisions of 21.A.122, and to record the results of the review and actions taken consequently as regards the part/product.
2. Any unintentional deviation from the manufacturing/inspection data should be recorded and handled in accordance with Part 21 Section A Subpart D or E as changes to the approved design.

GM 21.A.126(b)(6) Production Inspection System - Recording and record keeping

21.A.126(b)(6)

1. Records within a production environment satisfy two purposes. Firstly, they should, during the production process to ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the person producing under Part 21 Subpart F should implement a system for the compilation and retention of records during all stages of manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.
The management of such information should be subject to appropriate documented procedures in the Manual required by 21.A.125A(b).
All forms of recording media are acceptable (paper, film, magnetic ...) provided they can meet the required duration for archiving under the conditions provided.

2. The related procedures should:
   2.1 Identify records to be kept.
   2.2 Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information (e.g., by product, subject).
   2.3 Control access and provide effective protection from deterioration or accidental damage.
   2.4 Ensure continued readability of the records.
   2.5 Demonstrate to the competent authority proper functioning of the records system.
   2.6 Clearly identify the persons involved in conformity determination.
   2.7 Define an archiving period for each type of data taking into account importance in relation to conformity determination subject to the following:
      a Data which supports conformity of a product, part, or appliance should be kept for not less than three years from the issue date of the related Statement of Conformity or Authorised Release Certificate.
      b Data considered essential for continuing airworthiness should be kept throughout the operational life of the product, part or appliance.
   2.8 Data related to supplied parts may be retained by the supplier if the supplier has a system agreed under Part 21 Section A Subpart F by the competent authority. The manufacturer should, in each case, define the archiving period and satisfy himself or herself and the competent authority that the recording media are acceptable.

GM 21.A.127 Approved production ground and flight tests

21.A.127

The production ground and flight tests for new aircraft will be specified by the aircraft design organisation.

GM No. 1 to 21.A.128 Acceptable functional test - Engines

21.A.128

The functional test required for a new engine will be specified by the engine design organisation and will normally include at least the following:

1 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.

2 A period of operation at rated maximum continuous power or thrust. For engines having 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 accuracy sufficient to assure that the engine output delivered complies with the specified rating and operation limitations.

GM No. 2 to 21.A.128 Acceptable functional test -Variable pitch propellers

21.A.128

The functional tests required for a new propeller will be specified by the propeller design organisation and should normally include a number of 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.

GM No. 3 to 21.A.128 Acceptable functional test - Engines and Propellers

21.A.128

After functional test, each engine or propeller should be inspected to determine that the engine or propeller is in condition for safe operation. Such inspection will be specified by the design organisation and should normally include internal inspection and examination. The degree of internal inspections will normally be determined on the basis of the positive results of previous inspections conducted on the first production engines, and on the basis of service experience.

GM 21.A.129(a) Availability for inspection by the competent authority

21.A.129(a)

Each product, part or appliance should be made available for inspection at any time at the request of the competent authority.

It is recommended that a pre-defined plan of inspection points be established and agreed with the competent authority to be used as a basis for such inspections.

The manufacturer should provide such documentation, tools, personnel, access equipment etc. as necessary to enable the competent authority to perform the inspections.

AMC No. 1 to 21.A.129(c) Obligations of the manufacturer - Conformity of prototype models and test specimens

21.A.129(c)

21.A.33 requires determination of conformity of prototype models and test specimens to the applicable design data. For a complete aircraft a 'conformity document', that has to be validated by the competent authority, should be provided as part of the assistance to the design approval applicant. For products other than a complete aircraft, and for parts and appliances, an EASA Form 1 validated by the competent authority may be used as a conformity document as part of the assistance to the design approval applicant.

AMC No. 2 to 21.A.129(c) Obligations of the manufacturer - Conformity with Applicable Design Data

21.A.129(c)

Individual configurations are often based on the needs of the customer and improvements or changes which may be introduced by the type-certificate holder. There are also likely to be unintentional divergences (concessions or non-conformances) during the manufacturing process. All these changes are required to have been approved by the design approval applicant/holder, or when necessary by the Agency.

AMC No. 3 to 21.A.129(c) Obligations of the manufacturer - Condition for safe operation

21.A.129(c)

Before issue of the Statement of Conformity to the competent authority the manufacturer under this Subpart should make an investigation so as to be satisfied in respect to each of the items listed below. The documented results of this investigation should be kept on file by the manufacturer.

Certain of these items may be required to be provided (or made available) to the operator or owner of the aircraft, and, for validation of the statement of conformity, to the competent authority.

1 Equipment or modifications which 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, parts or appliances which:
- 2.1 Are not new
- 2.2 Are furnished by the buyer or future operator (including those identified in 21.A.801 and 805).

3 Technical records which identify the location and serial numbers of components that have traceability requirements for continued airworthiness purposes including those identified in 21.A.801 and 21.A.805.

4 Log book and a modification record book for the aircraft as required by the Agency.

5 Log books for products identified in 21.A.801 installed as part of the type design as required by the Agency.

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 furnishing or BFE (Items may be recorded in a technical log or other suitable arrangement such that the operator and Agency are formally aware).

8 Product support information required by other associated implementing rules and CS or GM, such as a Maintenance Manual, a Parts Catalogue, or MMEL all of which are to 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 the particular aircraft to the manufacturers recommended maintenance task list and the Maintenance Review Board (MRB) document/report.

10 Details of the serviceability state of the aircraft in respect of, a) the fuel and oil contents, b) provision of operationally required emergency equipment such as life rafts, etc.

11 Details of the approved interior configuration if different from that approved as part of the type design.

12 An approved Flight Manual which conforms to the build standard and modification state of the particular aircraft should be available.

13 Show that inspections for foreign objects at all appropriate stages of manufacture have been satisfactorily performed.

14 The registration has been marked on the exterior of the aircraft as required by national legislation. Where required by national legislation fix a fireproof owners nameplate.

15 Where applicable, there should be a certificate for noise and, for the aircraft radio station.

16 The installed compass and or compass systems have been adjusted and compensated and a deviation card displayed in the aircraft.

17 Software criticality list.

18 A record of rigging and control surface movement measurements.

19 Details of installations which will be removed before starting commercial air transport operations (e.g., ferry kits for fuel, radio or navigation).

20 List of all applicable Service Bulletins and airworthiness directives that have been implemented.

AMC No. 1 to 21.A.130(b) Statement of Conformity for Complete Aircraft

21.A.130(b)

1 PURPOSE AND SCOPE

The description under this AMC refers only to the use of the aircraft Statement of Conformity issued under Part 21 Section A Subpart F. Statement of Conformity under Part 21 Subpart F for products other than complete aircraft, and for parts and appliances is described in AMC No. 2 to 21.A.130(b).

Use of the aircraft Statement of Conformity issued by an approved production organisation is described in 21.A.163(b) under Part 21 Section A Subpart G and the completion instructions are to be found in the Appendices to Part 21.

The purpose of the aircraft Statement of Conformity (EASA Form 52) issued under Part 21 Section A Subpart F is to present to the competent authority a complete aircraft. The competent authority only validates the Statement of Conformity if it finds, as described in 21.A.130 and its associated GM, that the aircraft conforms with the type design and is in condition for safe operation.

2 GENERAL

The Statement of Conformity must comply with the format attached including block numbers and the location of each Block. The size of each Block may however be varied to suit the individual application, but not to the extent that would make the Statement of Conformity unrecognisable. If in doubt consult the competent authority.

The Statement of Conformity must either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

Statements of Conformity must be issued in one or more of the official language(s) of the issuing competent authority with translations in English shown below, if required. Completion may be either machine/computer printed or hand-written using block letters to permit easy reading.

A copy of the Statement of Conformity and all referenced attachments are to be retained by the manufacturer.

A copy of the validated Statement of Conformity is to be retained by the competent authority.

3 COMPLETION OF THE AIRCRAFT STATEMENT OF CONFORMITY BY THE ORIGINATOR

There must be an entry in all Blocks to make the document a valid Statement.

A Statement of Conformity must not be issued for validation by the competent authority, unless the design of the aircraft and its installed products are approved.

The information required in Blocks 9, 10, 11, 12, 13 and 14 may be by reference to separate identified documents held on file by the manufacturer, unless the competent authority agrees otherwise.

This Statement of Conformity is not intended to provide for the complete equipment fit required by the applicable operational rules. However, some of these individual items may be included in Block 10 or in the approved type design. Operators are therefore reminded of their responsibility to ensure compliance with the applicable operational rules for their own particular operation.

Block 1Enter name of the State of manufacture.

Block 2 The competent authority under which authority the Statement of Conformity is issued.

Block 3 A unique serial number should be pre-printed in this Block for Statement control and traceability purposes. Except that in the case of a computer generated document the number need not be pre-printed where the computer is programmed to produce and print a unique number.

Block 4 The full name and location address of the manufacturer issuing the statement. This Block may be pre-printed. Logos, etc., are permitted if the logo can be contained within the Block.

Block 5 The aircraft type in full as defined in the type-certificate and its associated data sheet.

Block 6 The type-certificate reference numbers and issue for the subject aircraft.

Block 7 If the aircraft is registered then this mark will be the registration mark. If the aircraft is not registered then this will be such a mark that is accepted by the competent authority of the Member State and, if applicable, by the competent authority of a third country.

Block 8 The identification number assigned by the manufacturer for control and traceability and product support. This is sometimes referred to as a Manufacturers Serial No or Constructors No.

Block 9 The engine and propeller type(s) in full as defined in the relevant type-certificate and its associated data sheet. Their manufacturer identification No and associated location should also be shown.

Block 10 Approved design changes to the Aircraft Definition.

Block 11A listing of all applicable airworthiness directives (or equivalent) and a declaration of compliance, together with a description of the method of compliance on the subject individual aircraft including products and installed parts, appliances and equipment. Any future compliance requirement time should be shown.

Block 12 Approved unintentional deviation to the approved type design sometimes referred to as concessions, divergences, or non-conformances.

Block 13 Only agreed exemptions, waivers or derogations may be included here..

Block 14 Remarks: Any statement, information, particular data or limitation which may affect the airworthiness of the aircraft. If there is no such information or data, state; 'NONE'.

Block 15 Enter 'Certificate of Airworthiness' or 'Restricted Certificate of Airworthiness' for the Certificate of Airworthiness requested.

Block 16 Additional requirements such as those notified by an importing country should be noted in this Block.

Block 17 Validity of the Statement of Conformity is dependent on full completion of all Blocks on the form. A copy of the flight test report together with any recorded defects and rectification details should be kept on file by the manufacturer. The report should be signed as satisfactory by the appropriate certifying staff and a flight crew member, e.g., test pilot or flight test engineer. The flight tests performed are those required by 21.A.127 and GM 21.A.127, to ensure that the aircraft conforms to the applicable design data and is in condition for safe operation.

The listing of items provided (or made available) to satisfy the safe operation aspects of this statement should be kept on file by the manufacturer.

Block 18 The Statement of Conformity may be signed by the person authorised to do so by the manufacturer in accordance with 21.A.130(a). A rubber stamp signature should not be used.

Block 19 The name of the person signing the certificate should be typed or printed in a legible form.

Block 20 The date the Statement of Conformity is signed must be given.

Block 21For production under Part 21 Subpart F, state 'NOT APPLICABLE'

Additionally, for production under Part 21 Section A Subpart F, this Block must include validation by the competent authority. For this purpose, the validation statement below should be included in the Block 21 itself, and not referred in a separate document. The statement can be pre-printed, computer generated or stamped, and should be followed by the signature of the representative of the competent authority validating the certificate, the name and the position/identification of such representative of the competent authority, and the date of such validation by the competent authority.

VALIDATION STATEMENT:

'After due inspection the ?identify the issuing competent authority ?is satisfied that this document constitutes an accurate and valid Statement of Conformity in accordance with Part 21 Section A Subpart F.'

AMC No. 2 to 21.A.130(b) Statement of Conformity for Products (other than complete aircraft), parts, appliances and materials - The Authorised Release Certificate (EASA Form 1)

21.A.130(b)

A. INTRODUCTION

This AMC relates specifically to the use of the EASA Form 1 for manufacturing purposes under Part 21 Subpart F. It can be used as a supplement to the completion instructions in Part 21, Appendix I which covers the use of the EASA Form 1.

1. PURPOSE AND USE

The EASA Form 1 is prepared and signed by the manufacturer. For production under Part 21 Subpart F it is presented for validation by the competent authority.

Under Subpart F the certificate may only be issued by the competent authority.

A mixture of items released under Subpart G and under Subpart F of Part 21 is not permitted on the same certificate.

2. GENERAL FORMAT

Refer to Part 21 Appendix I.

3. COPIES

Refer to Part 21 Appendix I.

The Part 21 Subpart F originator must retain a copy of the certificate in a form that allows verification of original data.

4. ERROR(S) ON THE CERTIFICATE

If an end user finds an error(s) on a certificate, they must identify it/them in writing to the originator. The originator may prepare and sign a new certificate for validation by the competent authority if they can verify and correct the error(s).

The new certificate must have a new tracking number, signature and date.

The request for a new certificate may be honoured without re-verification of the item(s) condition. The new certificate is not a statement of current condition and should refer to the previous certificate in block 12 by the following statement: 'This certificate corrects the error(s) in block(s) [enter block(s) corrected] of the certificate [enter original tracking number] dated [enter original issuance date] and does not cover conformity/condition/release to service.' Both certificates should be retained according to the retention period associated with the first.

5. COMPLETION OF THE CERTIFICATE BY THE ORIGINATOR

Refer to Part 21 Appendix I for completion of the certificate. Specific Part 21 Subpart F instructions that differ from the Part 21 Appendix I are provided below.

Block 1 - Approving competent authority/Country

State the name and country of the competent authority under whose jurisdiction this certificate is issued. When the competent authority is the Agency, 'EASA' must be stated.

Block 12 - Remarks

Examples of conditions which would necessitate statements in Block 12 are:

- When the certificate is used for prototype purposes, the following statement must be entered at the beginning of Block 12:
  'NOT ELIGIBLE FOR INSTALLATION ON IN-SERVICE TYPE-CERTIFICATED AIRCRAFT'.
- Re-certification of items from 'prototype' (conformity only to non-approved data) to 'new' (conformity to approved data and in a condition for safe operation) once the applicable design data is approved.
  The following statement must be entered in Block 12:
  RE-CERTIFICATION OF ITEMS FROM 'PROTOTYPE' TO 'NEW':
  THIS DOCUMENT CERTIFIES THE APPROVAL OF THE DESIGN DATA [insert TC/STC number, revision level], DATED [insert date if necessary for identification of revision status], TO WHICH THIS ITEM (THESE ITEMS) WAS (WERE) MANUFACTURED.
- When a new certificate is issued to correct error(s), the following statement must be entered in Block 12:
  'THIS CERTIFICATE CORRECTS THE ERROR(S) IN BLOCK(S) [enter block(s) corrected] OF THE CERTIFICATE [enter original tracking number] DATED [enter original issuance date] AND DOES NOT COVER CONFORMITY/CONDITION/RELEASE TO SERVICE'.

Additionally, for production under Subpart F, this block must include the Statement of Conformity by the manufacturer under 21.A.130. For this purpose, the appropriate Block 13a statement must be included in the block 12 and not referenced in a separate document. The statement may be pre-printed, computer generated or stamped, and must be followed by the signature of the manufacturer's authorised person under 21.A.130(a), the name and the position/identification of such person and the date of the signature.

- In case of an engine, when the Competent Authority has granted an emissions production cut-off exemption the following statement must be entered in block 12:

[“NEW” OR “SPARE”] ENGINE EXEMPTED FROM NOx EMISSIONS PRODUCTION CUT-OFF REQUIREMENT’.

Block 13b - Authorised Signature

This space shall be completed with the signature of the competent authority representative validating the Block 12 manufacturer Statement of Conformity, under 21.A.130(d). To aid recognition, a unique number identifying the representative may be added.

Block 13c - Approval/Authorisation Number

Enter the authorisation number reference. This number or reference is given by the competent authority to the manufacturer working under Part 21 Subpart F.

AMC 21.A.130(c) Validation of the Statement of Conformity

21.A.130(c)

It is the responsibility of the applicant to ensure that each and every product, part and appliance conforms to the applicable design data and is in condition for safe operation before issuing and signing the relevant statement of conformity. During manufacture, the applicant is expected to use such facilities, systems, processes and procedures as are described in the Manual and have been previously agreed with the competent authority.

The competent authority must then make such inspection and investigation of records and product, part or appliance as are necessary to determine that the agreed facilities, systems, processes and procedures have been used, and that the statement of conformity may be regarded as a valid document.

To enable timely inspection and investigation by the competent authority, the statement of conformity must be prepared and submitted to the competent authority immediately upon satisfactory completion of final production inspection and test.

<2012/020/R Corrigendum>

AMC 21.A.130(c)(1) Initial transfer of ownership

21.A.130(c)(1)

Upon transfer of ownership:

a) For a complete aircraft, whether or not an application for a certificate of airworthiness is to be made, an EASA Form 52 must be completed and submitted to the competent authority for validation.

b) For anything other than a complete aircraft an EASA Form 52 is inappropriate, and an EASA Form 1 must be completed and submitted to the competent authority for validation.

NOTE: If there is any significant delay between the last production task and presentation of the EASA Form 52 or EASA Form 1 to the competent authority, then additional evidence relating to the storage, preservation and maintenance of the item since its production must be presented to the competent authority.

<2012/020/R Corrigendum>

AMC 21A.130 (b) (4) Applicable emissions requirements

21.A.130(b)(4)

1. General

This determination is made according to the data provided by the engine type-certificate holder. This data should allow the determination of whether the engine complies with the emissions production cut-off requirement of paragraph (d) of Volume II, Part III, Chapter 2, paragraph 2.3.2 of Annex 16 to the Chicago Convention. It should be noted that in the case of engines for which the Competent Authority has granted an exemption from these requirements, the emissions requirements applicable are the regulatory levels defined in Volume II, Part III, Chapter 2, paragraph 2.3.2 c) of Annex 16 to the Chicago Convention.

2. Process and criteria for exemptions against a NOx emissions production cut-off requirement

2.1 Request

The organisation should submit a formal request to the Competent Authority, signed by an appropriate manager, and copied to all other relevant organisations and involved Competent Authorities including the Agency. The letter should include the following information for the Competent Authority to be in a position to review the application:

a) Administration

- Name, address and contact details of the organisation.

b) Scope of the request

- Engine type (model designation, type-certificate (TC) number, TC date, emission TC basis, ICAO Engine Emissions Databank Unique Identification (UID) Number);
- Number of individual engine exemptions requested;
- Duration (end date) of continued production of the affected engines.
- Whether the proposed affected engines are ‘spares’ or ‘new’ and whom the engines will be originally delivered to.

Note: In the case where the engines are ‘new’ (new engines installed on new aircraft), and if this would result in a larger negative environmental impact as compared to exemptions only for spare engines, more detailed justification could be required to approve this application.

c) Justification for exemptions

When requesting an exemption for a ‘new’ engine, the organisation should, to the extent possible, address the following factors, with quantification, in order to support the merits of the exemption request:

- Technical issues, from an environmental and airworthiness perspective, which may have delayed compliance with the production cut-off requirement;
- Economic impacts on the manufacturer, operator(s) and aviation industry at large;
- Environmental effects. This should consider the amount of additional NOx emissions that will be emitted as a result of the exemption. This could include consideration of items such as:
  - the amount that the engine model exceeds the NOx emissions standard, taking into account any other engine models in the engine family covered by the same type-certificate and their relation to the standard;

- the amount of NOx emissions that would be emitted by an alternative engine for the same application; and
- the impact of changes to reduce NOx on other environmental factors, including community noise and CO2 emissions;

- Impact of unforeseen circumstances and hardship due to business circumstances beyond the manufacturer's control (e.g. employee strike, supplier disruption or calamitous events);
- Projected future production volumes and plans for producing a compliant version of the engine model seeking exemption;
- Equity issues in administering the production cut-off among economically competing parties (e.g. provide rationale for granting this exemption when another manufacturer has a compliant engine and does not need an exemption, taking into account the implications for operator fleet composition, commonality and related issues in the absence of the engine for which exemptions are sought);
- Any other relevant factors.

2.2 Evaluation

2.2.1. Since the Agency has the overview of the exemptions granted within the Member States and within Third Countries by contacting the relevant Design Organisation, the Agency advises the Competent Authority during the process of granting exemptions. The advice from the Agency should take the form of a letter sent to the Competent Authority.

2.2.2 The evaluation of an exemption request should be based on the justification provided by the organisation and on the following definitions and criteria:

a) Use of engines

- 'Spare engines' are defined as complete new engine units which are to be installed on in-service aircraft for maintenance and replacement. It can be presumed that exemption applications associated with engines for this purpose would be granted as long as the emissions were equal to or lower than those engines they are replacing. The application should include the other items described in points (a) and (b) of paragraph 2.1 above, but it would not need to include the items specified in point (c). For spare engines, the evaluation of the exemption application would be conducted for record keeping and reporting purposes, but it would not be done for approval of an exemption.
- 'New engines' are defined as complete new engine units which are to be installed on new aircraft. They can only be exempted from a NOx production cut-off requirement if they already meet the previous standard (e.g. exemption from the CAEP/6 NOx production cut-off requirement of paragraph (d) of Volume II, Part III, Chapter 2, paragraph 2.3.2 of Annex 16 to the Chicago Convention is only possible if an engine type already meets the regulatory levels defined in Volume II, Part III, Chapter 2, paragraph 2.3.2 c) of Annex 16 to the Chicago Convention). Also, in order for and exemption to be granted for this type of engine the applicant must clearly demonstrate that they meet the criteria for an exemption by including items described in points (a), (b) and (c) of paragraph 2.1 above. The Competent Authority may require additional information regarding the appropriateness of the potential exemption.

b) Number of new engine exemptions

Exemptions should be based on a total number of engines and time period for delivery of these engines, which would be agreed at the time the application is approved and based on the considerations explained in point (c) of paragraph 2.1 above. The number of engines exempted should not exceed 75 per engine type-certificate, and the end date of continued production of the affected engines should not exceed 31.12.2016. The number of exemptions is related to individual non-compliant engines covered under the same type-certificate.

Exemptions for new engines should be processed and approved by the Competent Authority, in agreement with the Agency, for both the manufacture of the exempted engines and the initial operator of the aircraft to which they are to be fitted. Given the international nature of aviation, the Agency should attempt to collaborate and consult on the details of exemptions. In the case where engine type certification is done through a reciprocity agreement between the Agency and Third

Countries, the Agency should coordinate on the processing of exemptions and concur before approval is granted.

c) Other engines

Unlimited exemptions may be granted for continued production of spare engines having emissions equivalent to or lower than the engines they are replacing. Engines for use on aircraft excluded from the scope of the Basic Regulation - i.e. aircraft specified in Annex II to the Basic Regulation and aircraft involved in activities referred to in Article 1(2) of the Basic Regulation (e.g. military, customs, police, search and rescue, fire fighting, coastguard or similar activities or services) - are excluded from civil aircraft NOx production cut-off requirements.

2.3 Rejection of request

If the competent authority rejects the request for exemption, the response should include a detailed justification.

<ED Decision 2013/001/R, new GM>

GM 21A.130 (b) (4) Definitions of engine type certification date and production date

21.A.130(b)(4)

Volume II of Annex 16 to the Chicago Convention contains two different references to applicability dates:

- 'Date of manufacture for the first individual production model' which refers to the engine type certification date; and
- 'Date of manufacture for the individual engine' which refers to the production date of a specific engine serial number (date of Form 1).

The second reference is used in the application of the engine NOx emissions production cut-off requirement, which specifies a date after which all in-production engine models must meet a certain NOx emissions standard.

21A.130(b)(4) includes the production requirements and refers to paragraphs (b) and (d) of Volume II, Part III, Chapter 2, paragraph 2.3 of Annex 16 to the Chicago Convention.

<ED Decision 2013/001/R, new GM>

Subpart G - Production organisation approval for products, parts and appliances

AMC-ELA No 1 to 21.A.131 Scope

21.A.131

The AMC-ELA in this Subpart provide acceptable means of compliance for the issuance of a production organisation approval for organisations that produce

- aeroplanes that are within the scope of CS-LSA, CS-VLA and CS-23 level 1;
- sailplanes or powered sailplanes that are within the scope of CS-22; or
- balloons, hot-air airships and gas airships that are ELA2 aircraft,

that are not classified as complex motor-powered aircraft, as well as products or parts used on these products.

GM-ELA No 1 to 21.A.131 Scope — General applicability of AMC-ELA and the use of AMC-ELA as a baseline outside its scope

21.A.131

The AMC indicated with 'AMC-ELA' and the GM related to them (as indicated with 'GM-ELA'), provide an alternative set of AMC and GM to the other available AMC and GM.

The AMC-ELA provide acceptable means to meet the requirements for small, non-complex organisations that produce aircraft as specified in AMC-ELA No 1 to 21.A.131.

If the AMC-ELA are not applicable (for instance for small, non-complex organisations that produce other low-risk products that are outside the scope of AMC-ELA No 1 to 21.A.131, e.g. light rotorcraft, CS-23 Level 2, etc.), the applicant is not obliged to use any other available AMC. Switching to those other available AMC will not necessarily provide a means of compliance that is proportionate. Since AMC are a means, but not the only means, of showing compliance, applicants and approval holders can also propose alternative means of compliance. These alternative means can use the AMC-ELA as a baseline, and complement them by additional or more stringent controls, processes or methods. This allows a gradual increase in the level of detail of the established procedures and the thoroughness of the implemented tools for POA approval. This enables the introduction of a proportionate approach that is commensurate with the kind of product and its associated risk or its production process risks, as a function of the complexity of the organisations and the risk and performance of the product. Using the AMC-ELA as a baseline for POA outside the applicability of the AMC-ELA is therefore considered to be an appropriate starting point.

Complementary elements need to be detailed, documented and recorded to a level at which the occurrence of repetitive non-conformities is mitigated. Applicants and approval holders need to demonstrate to the competent authority in such cases that those additional means meet the requirements that are appropriate for the products being produced.

GM-ELA No 2 to 21.A.131 Scope — AMC-ELA as a complete, self-contained set of AMC

21.A.131

The AMC-ELA provide an alternative, complete and self-contained set of AMC. Applicants or POA holders that manufacture products or parts within the scope of AMC-ELA can use AMC-ELA instead of the existing AMC to Subpart G.

The AMC-ELA in full determine the acceptable means of compliance with Subpart G. The applicant should implement each of the means defined here on an individual basis. If the specific characteristics of the organisation render individual elements of AMC-ELA impracticable or not applicable, alternative means with a specific resolution should be agreed with the competent authority. A justification needs to be developed to show that the means that are applied meet the requirements of Part-21. A trustful relationship between the typically very compact team of the applicant and the competent authority should be developed. The applicant is strongly encouraged to ask the relevant contact person at the competent authority for mutual clarification of any questionable item, if there is any doubt.

GM-ELA No 3 to 21.A.131 Scope — Applicable design data

21.A.131

GM 21.A.131 applies.

GM-ELA No 4 to 21.A.131 Scope — Explanation of terms used in AMC-ELA

21.A.131

‘A method needs to be practised’.

When AMC-ELA applies the principle that ‘a method needs to be practised’, it means that the applicant can show what is actually done in order to comply with a requirement in a practical but systematic way. The applicant is not expected to have an excessively detailed documented procedure. As a baseline, documented procedures for such ‘practised methods’ can be limited to a declaration of the principles that are considered within the practised method. For example, a declaration such as ‘Document control is ensured by the workflow management as part of the IT-based Document Management System (DMS)’, may be provided. This is acceptable when evidence is provided by work results, by the demonstration of satisfactory conduct during surveillance activities, or by similar means. When the actions that are continuously performed show that they do not satisfy the needs of the AMC, a more detailed and documented procedure may need to be implemented to rectify the situation.

‘Delegation of tasks and responsibilities’

AMC-ELA differentiates between the delegation of tasks and the delegation of responsibilities. For small and simple organisations, the delegation of responsibilities to specific and separate organisational positions can create overly burdensome administrative processes that do not reflect the operational reality. The AMC-ELA accepts that tasks can be delegated, while the responsibility formally remains with the delegator. This can increase efficiency, and it offers the possibility for the applicant to simplify procedures. A typical example is when the accountable manager delegates tasks, while keeping the responsibility associated with these tasks.

If this situation is identified with respect to the individual requirements, this may significantly reduce the effort required for documentation, and it allows streamlined methods to be practised.

‘Consolidated team’

AMC-ELA makes reference to companies working in a ‘consolidated team’, mainly in relation to coordination between the design and production activities. Companies are considered to be working in consolidated teams if the following criteria apply:

- Even when a consolidated team spans across different legal entities, it acts as one organisation;
- A consolidated team is expected to work within one consolidated setup, and under one management, so that a free flow of information is inherently ensured;
- In a consolidated team, functions are not duplicated, so the same person(s) takes care of both the production and design aspects of any one function;
- Responsibilities are defined at the level of the person or the position, not at the level of the legal entity;
- Within consolidated teams, adequate coordination is expected to be present through ‘practised methods’, without any further written definitions of responsibilities beyond those elements that are explicitly described within AMC-ELA.

GM 21.A.131 Scope - Applicable design data

21.A.131

Applicable design data is defined as all necessary drawings, specifications and other technical information provided by the applicant for, or holder of a design organisation approval, TC, STC, approval of repair or minor change design, or ETSO authorisation and released in a controlled manner to a production organisation approval holder. This should be sufficient for the development of production data to enable repeatable manufacture to take place in conformity with the design data.

Prior to issue of the TC, STC, approval of repair or minor change design or ETSO authorisation, or equivalent, design data is defined as 'not approved' but parts and appliances may be released with an EASA Form 1 as a certificate of conformity.

After issue of the TC, STC, approval of repair or minor change or ETSO authorisation, or equivalent, this design data is defined as 'approved' and items manufactured in conformity are eligible for release on an EASA Form 1 for airworthiness purposes.

For the purpose of Subpart G of Part 21 the term ‘applicable design data’ includes, in case of engines and when applicable, the information related to the applicable emissions production cut-off requirement.

<ED Decision 2013/001/R new last paragraph>

GM 21.A.133(a) Eligibility - Approval appropriate for showing conformity

21.A.133(a)

'Appropriate' should be understood as follows:

- The applicant produces or intends to produce aeronautical products, parts and/or appliances intended for airborne use as part of a type-certificated product (this excludes simulators, ground equipment and tools).
- The applicant will be required to show a need for an approval, normally based on one or more of the following criteria:
  1 Production of aircraft, engines or propellers (except if the competent authority considers a POA inappropriate)
  2 Production of ETSO articles and parts marked EPA
  3 Direct delivery to users such as owners or operators maintenance organisations with the need for exercising the privileges of issuing Authorised Release Certificates - EASA Form 1
  4 Participation in an international co-operation program where working under an approval is considered necessary by the competent authority
  5 Criticality and technology involved in the part or appliance being manufactured. Approval in this case may be found by the competent authority as the best tool to exercise its duty in relation to airworthiness control
  6 Where an approval is otherwise determined by the competent authority as being required to satisfy the essential requirements of Annex I to the Regulation (EC) No 216/2008.
- It is not the intent of the competent authority to issue approvals to manufacturing firms that perform only subcontract work for main manufacturers of products and are consequently placed under their direct surveillance.
- Where standard parts, materials, processes or services are included in the applicable design data (see guidance on applicable design data in GM 21.A.131) their standards should be controlled by the POA holder in a manner which is satisfactory for the final use of the item on the product, part or appliance. Accordingly, the manufacturer or provider of the following will not at present be considered for production organisation approval:
  - consumable materials
  - raw materials
  - standard parts
    - parts identified in the product support documentation as 'industry supply' or 'no hazard'
    - non-destructive testing or inspection
    - processes (heat treatment, surface finishing, shot peening, etc.)

AMC No. 1 to 21.A.133(b) and (c) Eligibility - Link between design and production organisations

21.A.133(b)
21.A.133(c)

An arrangement is considered appropriate if it is documented and satisfies the competent authority that co-ordination is satisfactory.

To achieve satisfactory coordination the documented arrangements must at least define the following aspects irrespective of whether the two organisations are separate legal entities or not:

- The responsibilities of a design organisation which assure correct and timely transfer of up-to-date airworthiness data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.);
- The responsibilities and procedures of a POA holder/applicant for developing, where applicable, its own manufacturing data in compliance with the airworthiness data package;
- The responsibilities of a POA holder/applicant to assist the design organisation in dealing with continuing airworthiness matters and for required actions (e.g., traceability of parts in case of direct delivery to users, retrofitting of modifications, traceability of processes' outputs and approved deviations for individual parts as applicable, technical information and assistance, etc.);
- The scope of the arrangements must cover Part 21 Subpart G requirements and associated AMC and GM, in particular: 21.A.145(b), 21.A.165(c), (f) and (g);

- The responsibilities of a POA holder/applicant, in case of products prior to type certification to assist a design organisation in demonstrating compliance with CS (access and suitability of production and test facilities for manufacturing and testing of prototype models and test specimen);
- The procedures to deal adequately with production deviations and non-conforming parts;
- The procedures and associated responsibilities to achieve adequate configuration control of manufactured parts, to enable the production organisation to make the final determination and identification for conformity or airworthiness release and eligibility status;
- The identification of the responsible persons/offices who control the above;
- The acknowledgment by the holder of the TC/STC/repair or change approval/ETSO authorisation that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved.

In many cases the production organisation may receive the approved design data through an intermediate production organisation. This is acceptable provided an effective link between the design approval holder and the production organisation can be maintained to satisfy the intent of 21.A.133.

When the design and production organisations are two separate legal entities a Direct Delivery Authorisation must be available for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

Where there is no general agreement for Direct Delivery Authorisation, specific permissions may be granted (refer to AMC 21.A.4).

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

21.A.133(b)
21.A.133(c)

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

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

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

Arrangement Sample Form

ARRANGEMENT in accordance with 21.A.133(b) and (c)	
The undersigned agree on the following commitments:	Relevant interface procedures
The design organisation [NAME] takes responsibility to - assure correct and timely transfer of up-to-date applicable design data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.) to the production organisation approval holder [NAME] - provide visible statement(s) of approved design data.	
The production organisation approval holder [NAME] takes responsibility to - assist the design organisation [NAME] in dealing with continuing airworthiness matter and for required actions - assist the design organisation [NAME] in case of products prior to type certification in demonstrating compliance with certification specifications - develop, where applicable, its own manufacturing data in compliance with the airworthiness data package.	

The design organisation [NAME] and the POA holder [NAME] take joint responsibility to - deal adequately with production deviations and non-conforming parts in accordance with the applicable procedures of the design organisation and the production organisation approval holder - achieve adequate configuration control of manufactured parts, to enable the POA holder to make the final determination and identification for conformity.	
The scope of production covered by this arrangement is detailed in [DOCUMENT REFERENCE/ATTACHED LIST]	
[When the design organisation is not the same legal entity as the production organisation approval holder] Transfer of approved design data: The TC/STC/ETSO holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved by the competent authority and therefore the parts and appliances manufactured in accordance with these data and found in a condition for safe operation may be released certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation..	
[When the design organisation is not the same legal entity as the production organisation approval holder] Direct Delivery Authorisation: This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.	
For the [NAME of the design organisation/DOA holder] Date: Signature: xx.xx.xxxx ([NAME in block letters])	For the [NAME of the POA holder] Date: Signature: xx.xx.xxxx ([NAME in block letters])

Instructions for completion:

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

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

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

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

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

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

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

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

AMC-ELA No 1 to 21.A.133(c) Eligibility — Link between design and production

21.A.133(c)

The link between design and production is appropriately arranged when the organisation responsible for production and the one responsible for design both work within one consolidated team. The following documented arrangement

may be used between the production organisation and the applicant for, or the holder of, a type design, in order to record their respective responsibilities.

ARRANGEMENT in accordance with AMC-ELA No1 to 21.A.133(c)	
The undersigned agree on the following commitments:	
The design organisation [NAME] takes responsibility for - assuring 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 production organisation approval holder [NAME]; - providing visible statement(s) of approved design data.	
The production organisation approval holder [NAME] takes responsibility for - assisting the design organisation [NAME] in dealing with continuing airworthiness matters and for required actions; - assisting the design organisation [NAME], with products prior to type certification, in demonstrating products' compliance with the certification specifications; - developing, where applicable, its own manufacturing data in compliance with the airworthiness data package.	
The design organisation [NAME] and the POA holder [NAME] take joint responsibility for - dealing adequately with production deviations and non-conforming parts in accordance with the applicable procedures of the design organisation and the production organisation approval holder; - achieving adequate configuration control of manufactured parts to enable the POA holder to make the final determination and identification for conformity.	
The scope of production that is covered by this arrangement is detailed in the POE	
[If the design organisation is not the same legal entity as the production organisation approval holder] **Transfer of approved design data:** The TC/STC/ETSO holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with this arrangement are recognised as having been approved by the competent authority, and that therefore, the parts and appliances manufactured in accordance with these data and found to be in a condition for safe operation may be released, certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation.	
[If the design organisation is not the same legal entity as the production organisation approval holder] **Direct Delivery Authorisation:** This acknowledgment also includes [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.	
For the [NAME of the design organisation/DOA holder] Date: Signature: xx.xx.xxxx ([NAME in block letters])	For the [NAME of the POA holder] Date: Signature: xx.xx.xxxx ([NAME in block letters])

AMC-ELA No 2 to 21.A.133(c) Eligibility — Link between design and production

21.A.133(c)

If the approval is held or is applied for by a different entity, and the work is not performed by one consolidated team, an arrangement in accordance with AMC-ELA No 1 to 21.A.133(c) is not sufficient. The roles and responsibilities for the coordination between the design and production staff (in both directions) need to be established. This may be achieved, for example, by simple flow chart definitions supported by strong, self-explanatory forms, or by task descriptions of responsible functions in the organisation, or by equivalent means. IT-based enterprise resource planning (ERP) systems can 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, without any further need for written definitions. Further means with a comparable effect are possible. Internal and external audits can verify that the coordination functions properly.

GM 21.A.134 Application - Application form and manner

21.A.134

EASA Form 50 (see AMC 21.B.220(c)) should be obtained from the competent authority, and completed by the accountable manager of the organisation.

The completed form, an outline of the production organisation exposition, and details of the proposed terms of approval are to be forwarded to the competent authority.

GM-ELA No 1 to 21.A.134 Scope — Application

21.A.134

GM 21.A.134 applies.

GM-ELA No 1 to 21.A.139(a) Quality system

21.A.139(a)

The focus of the quality system is on the key workflows that are indispensable to ensure conformity to the relevant parameters of the applicable design data. The quality system should include elements to determine that there is conformity to the relevant parameters of the applicable design data and, if applicable, the production process definitions. The quality system should mitigate any repetitive non-conformities found in products or spare parts.

The production organisation should demonstrate that it has established, and will maintain, a quality system via integration or by making use of one of the following, as applicable:

- a valid ISO 9001 certificate;
- a valid EN 9100 certificate;
- compliance with ASTM F2972 for organisations that have only the production of CS-LSA aircraft in their scope of approval; or
- an individual quality system that meets all the definitions of the full set of AMC-ELA.

It should be ensured that the existing quality system covers all the aspects defined in 21.A.139(a). The quality system should be documented in such a way that the documentation can be made easily available to any personnel who need to use the material to perform their duties.

GM-ELA No 2 to 21.A.139(a) Quality system

21.A.139(a)

The documentation of the quality system can be done by any method that ensures that members of the organisation can obtain the actual and relevant information in a reasonable way. This explicitly includes 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 DMS, on paper, by illustration, by using workflow definitions within IT-based ERP systems, by other means, or by a combination of several such means.

The person responsible for the definition, implementation and maintenance of the quality system should be identified. This person should coordinate the maintenance of the system. For small-sized companies with low (product) complexity, typically the accountable manager bears this responsibility, even if that manager delegates tasks to a quality manager.

GM No. 1 to 21.A.139(a) Quality System

21.A.139(a)

The quality system is an organisational structure with responsibilities, procedures, processes, and resources which implement 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 who need to use the material for performing their normal duties, in particular:

- procedures, instructions, data to cover the issues of 21.A.139(b)(1) are available in a written form,
- distribution of relevant procedures to offices/persons is made in a controlled manner,
- procedures which identify persons responsible for the prescribed actions are established,
- the updating process is clearly described.

The manager responsible for ensuring that the quality system is implemented and maintained should be identified.

The competent authority will verify on the basis of the exposition and by appropriate investigations that the production organisation has established and can maintain their documented quality system.

GM No. 2 to 21.A.139(a) Quality System - Conformity of supplied parts or appliances

21.A.139(a)

The POA holder is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity of supplied products, parts or appliances, whether to be used in production or delivered to customers as spare parts. This responsibility also includes BFE (Buyer Furnished Equipment) items.

To discharge this responsibility the quality system needs an organisational structure and procedures to adequately control suppliers. Elements of the quality system for the control of suppliers may be performed by other parties provided that the conditions of AMC No. 1 or No. 2 to 21.A.139(b)(1)(ii) are met.

Control can be based upon use of the following techniques (as appropriate to the system or product orientation necessary to ensure conformity):

- qualification and auditing of supplier's quality system,
- evaluation of supplier capability in performing all manufacturing activities, inspections and tests necessary to establish conformity of parts or appliances to type design,
- first article inspection, including destruction if necessary, to verify that the article conforms to the applicable data for new production line or new supplier,
- incoming inspections and tests of supplied parts or appliances 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,
- a vendor rating system which gives confidence in the performance and reliability of this supplier,
- any additional work, tests or inspection which may be needed for parts or appliances which are to be delivered as spare parts and which are not subjected to the checks normally provided by subsequent production or inspection stages.

The POA holder may rely on inspection/tests performed by supplier if it can establish that:

- personnel responsible in charge of these tasks satisfy the competency standards of the POA quality system,
- quality measurements are clearly identified,
- the records or reports showing evidence of conformity are available for review and audit.

The control of suppliers holding a POA for the parts or appliances to be supplied can be reduced, to a level at which a satisfactory interface between the two quality systems can be demonstrated. Thus, for the purpose of showing conformity, a POA holder can rely upon documentation for parts or appliances released under a suppliers 21.A.163 privileges.

A supplier who does not hold a POA is considered as a sub-contractor under the direct control of the POA quality system.

The POA holder retains direct responsibility for inspections/tests carried out either at its own facilities or at supplier's facilities.

AMC-ELA No 1 to 21.A.139(b)(1) Quality system — Control procedures

21.A.139(b)(1)

Note: This AMC-ELA is numbered in accordance with the numbering of the subparagraphs of point 21.A.139(b)(1).

These minimum means are considered to be acceptable unless repeated non-conformities show otherwise. The quality system should contain, as applicable, the following structured information that may be provided and embedded in various documents and systems.

(i) Information is provided that shows how control procedures for the issuing, approval, or change of documents are organised and practised. This information also specifies to which documents it is applicable. A practised method describes how the use of invalid or superseded information in production is prevented.

(ii) A practised method describes how and when the assessment and surveillance of any vendors and subcontractors are carried out. This information explains how this is controlled. The assessment and surveillance of vendors and subcontractors are only required in cases where the methods identified in

(iii) below or in other production control mechanisms are not able to detect non-conformities with the applicable design data.

(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 can be achieved by one or more of the following practised methods:
- inspections of incoming articles;
- assessment and surveillance of vendors and subcontractors;
- other production control mechanisms that are able to detect non-conformities with the applicable design data.

(iv) Information is provided to show that procedures are practised that ensure the identification and traceability of parts and material in stock, in completed parts or in parts in process. Where the applicable design data specifies that parts require specific individual traceability, these parts are identified and records are kept.

(v) Information is provided for the procedures of the manufacturing process for:
- specific manufacturing process information as required in the applicable design data; and/or
- complementary procedures established by the production organisation.

Practised methods that use standard manufacturing processes do not require specific documentation.
If strict adherence to a manufacturing process is required in order to ensure that safety-critical product characteristics are met, this is specified in the manufacturing procedure.

(vi) Information is provided on the scope and sampling rate of production inspections and testing that, as a minimum, covers the inspection and testing that is defined as part of the applicable design data. If needed, it is complemented by inspections and testing as defined by the production organisation.
Information is provided for the flight test plan and flight conditions defined for the purpose of production acceptance flight tests, when applicable.

(vii) Information is provided on the tools, jigs and test equipment on which verification or calibration is performed and recorded. A statement that all other production tooling is controlled via practised methods is acceptable.

(viii) General practised methods are described that prevent the release of non-conforming products and their parts that would have an impact on the safe operation of the aircraft. Non-conformities are recorded in order to control the quality system.

(ix) General practised methods are described for adequate airworthiness coordination with the applicant for, or the holder of, the design approval. The documented DO/PO arrangement is used to define responsibilities.

(x) Information is provided about which production records are kept, and how completed records are kept in an adequately protected environment.

(xi) Information is provided that shows what the required competences and qualifications are for certifying staff, and how records on the certifying staff are kept.

(xii) Information is provided on the procedures to issue airworthiness release documents by the:
- identification of the persons permitted to issue airworthiness release documents; and
- identification of the relevant forms, and instructions for filling in the forms.

(xiii) Information is provided on the handling, storage and packaging methods that are adequate if:
- inappropriate handling, storage or packaging could lead to damage or deterioration;
- standard inspections prior to the use of the component would not detect defects; and
- such damage or deterioration would endanger the airworthiness of a component or a part.

(xiv) Information is provided on how internal quality audits and the resulting corrective action procedure are covered by practised surveillance mechanisms that allow the organisation to verify the efficiency of all the elements of the quality system as per this listing.

(xv) Work conducted in places other than the ‘major place of activity’ and the premises specified in the POE should be approved by the accountable manager, who must ensure that the critical process parameters for the work conducted, such as the light, temperature, humidity, etc., and adequate tooling, are identified and considered. Work conducted at such a location cannot be of a kind that would be performed at a ‘major place of activity’. The information on this kind of work is considered to be a change to the production approval, and it requires approval.

(xvi) Work carried out after the completion of the product, but prior to its delivery, is conducted according to the same definitions and procedures and by the same staff as are relevant for the regular production process. It is the responsibility of the accountable manager to ensure the adherence to this requirement.

(xvii) A workflow is defined that shows how to issue flight conditions and permits to fly (PtFs) for the purpose of the production flight testing of new production aircraft. When the flight test plan, the completed flight conditions and Forms 18a and 20b for the purpose of conducting the flight tests are provided as part of the approved type design, the workflow can be limited to:

- making the required entries in those documents (i.e. the reference to the individual aircraft S/N and the configuration);
- verification that the product configuration conforms with the definitions provided within the flight conditions document (which may be an integral part of the type inspection as part of the production workflow); and
- the issuing of the documents.

As part of the workflow, it should be defined that the production organisation can only issue flight conditions and PtFs for this case, and as long as this flight test plan and flight conditions can be fully adhered to.

When the production organisation issues flight conditions and PtFs for a purpose other than the production flight testing of new production aircraft, a flight test operations manual (FTOM) needs to be put in place, which should define the relevant workflows.

For companies that work as one consolidated team, it is sufficient to have one set of flight test procedures that have been established on the basis of an FTOM within either the design or the production organisation.

GM-ELA No 1 to 21.A.139(b)(1) Quality system — Control procedures

21.A.139(b)(1)

The documentation of the quality system, and the associated training, is limited to what is necessary to demonstrate that the products that are produced conform to the relevant design definition, and are in a condition for safe operation. If products are repeatedly found that do not conform, or if evidence is available that the products may be or may become unsafe, then enhanced procedures and documentation that go beyond the AMC-ELA may be one of the means, but not the only possible means, to rectify that situation.

The control procedures of a quality system can be defined by flow charts, process cards, or similar means. If enterprise resource planning (ERP) systems or other IT systems that manage workflows are applied, then separate workflow documentation is not necessary, as long as the workflow can be demonstrated on the basis of the IT system that is applied. The quality system methods should cover those aspects for which a failure to control these elements is expected to have a direct impact on the safe operation of the aircraft.

GM-ELA No 2 to 21.A.139(b)(1) Conformity of supplied parts or appliances

21.A.139(b)(1)

The organisation is responsible for ensuring that the delivered product conforms to the type design. This includes components that are used on the product and that are obtained from outside. To discharge this responsibility, the organisation needs to implement practised methods that ensure that non-conforming products are detected at a suitable point in time, prior to the declaration of conformity of the final product or the delivery of spare parts to the customer.

Organisations that apply AMC-ELA No 1 to 21.A.139(b)(1) should ensure, as a minimum, the conformity of supplied parts to a level that is defined as part of the approved type design by using one or more of the following methods:

- supplier control;
- the inspection of incoming goods;
- inspections conducted at a suitable stage of the production and verification flow;
- verification of the performance and the characteristics of the completed product; or
- other means that have an equivalent purpose.

If methods for the verification of conformity are defined as part of the approved type design, the organisation does not need to go beyond these verification methods in their extent, method or frequency.

If the type design does not determine the conformity criteria, the organisation may need to extend reasonable quality assurance methods to the related supplier if non-conformities of the parts would create a hazard.

GM 21.A.139(b)(1) Quality System - Elements of the quality system

21.A.139(b)(1)

1. The control procedures covering the elements of 21.A.139(b)(1) should document the standards to which the production organisation intends to work.
2. An organisation having a Quality system designed to meet a recognised Standard such as ISO 9001 (relevant to the scope of approval being requested) should expand it to include at least the following additional topics, as appropriate, in order to demonstrate compliance with the requirements of Part 21 Subpart G:

- Mandatory Occurrence Reporting and continued airworthiness as required by 21.A.165(e)
- Control of work occasionally performed (outside the POA facility by POA personnel)
- Co-ordination with the applicant for, or holder of, an approved design as required by 21.A.133(b) and (c) and 21.A.165(g)
- Issue of certifications within the scope of approval for the privileges of 21.A.163
- Incorporation of airworthiness data in production and inspection data as required in 21.A.133(b) and (c) and 21.A.145(b)
- When applicable, ground test and/or production flight test of products in accordance with procedures defined by the applicant for, or holder of, the design approval
- Procedures for traceability including a definition of clear criteria of which items need 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
- Personnel training and qualification procedures especially for certifying staff as required in 21.A.145(d).

3. An organisation having a quality system designed to meet a recognised aerospace quality standard will still need to ensure compliance with all the requirements of Subpart G of Part 21. In all cases, the competent authority will still need to be satisfied that compliance with Part 21 Subpart G is established.

AMC No. 1 to 21.A.139(b)(1)(ii) Vendor and sub-contractor assessment, audit and control - Production Organisation Approval (POA) holder using documented arrangements with other parties for assessment and surveillance of a supplier.

21.A.139(b)(1)(ii)

1. General

Note:
For the purpose of this AMC, vendors and sub-contractors are hereafter referred to as 'suppliers', regardless of whether or not they hold a POA and audit and control is hereafter referred to as 'surveillance'.

The production organisation is required by Part 21 to demonstrate that it has established and maintains a quality system that enables the organisation to ensure that each item produced conforms to the applicable design data and is in a condition for safe operation. To discharge this responsibility, the quality system should have, among other requirements, procedures to adequately carry out the assessment and surveillance of suppliers.
The use of Other Parties (OP), such as a consulting firm or quality assurance company, for supplier assessment and surveillance does not exempt the POA holder from its obligations under 21.A.165. The supplier assessment and surveillance, corrective action and follow-up activity conducted at any of its supplier's facilities may be performed by OP.
The purpose of using an OP cannot be to replace the assessment, audit and control of the POA Holder. It is to allow an element (i.e. the assessment of the quality system) to be delegated to another organisation under controlled conditions.
The use of OP to perform supplier assessments and surveillance should be part of the production organisation quality system and fulfil the conditions of this AMC.
This AMC is applicable to a method whereby a POA holder has a documented arrangement with OP for the purpose of assessing and/or surveying a POA's supplier.

2. Approval by the competent authority

Implementing or changing procedures for using OP for supplier assessment and surveillance is a significant change to the quality system and requires approval in accordance with 21.A.147.

3. Conditions and criteria for the use of OP to perform supplier assessment and surveillance

(a) The POA holder should include the use of OP for supplier assessment and surveillance in the POA holders' quality system to demonstrate compliance with the applicable requirements of Part 21.

(b) Procedures required for using OP for supplier assessment and surveillance should be consistent with other procedures of the POA holders' quality system.

(c) Procedures of the POA holder that uses OP to perform supplier assessment and surveillance should include the following:

(1) Identification of the OP that will conduct supplier assessment and surveillance.

(2) A listing of suppliers under surveillance by the OP. This listing should be maintained by the POA holder and made available to the competent authority upon request.

(3) The method used by the POA holder to evaluate and monitor the OP. The method should include the following as a minimum:

(i) Verification that standards and checklists used by the OP are acceptable for the applicable scope.

(ii) Verification that the OP is appropriately qualified and have sufficient knowledge, experience and training to perform their allocated tasks.

(iii) Verification that the OP surveillance frequency of the suppliers is commensurate with the complexity of the product and with the surveillance frequency established by the POA holder's suppliers control programme.

(iv) Verification that the suppliers' assessment and surveillance is conducted on-site by the OP.

(v) Verification that the OP has access to applicable proprietary data to the level of detail necessary to survey suppliers functions.

Where the POA holder uses an OP accredited by a signatory to the European cooperation for Accreditation (EA) Multilateral Agreement and working in accordance with an aviation standard (e.g. EN 9104 series of requirements) that describes requirements for the other party assessment and surveillance, the items (ii) and (iv) shall be deemed to be complied with.

(4) A definition to what scope the OP will conduct suppliers surveillance on behalf of the POA holder. If the OP replaces surveillance in part, the POA holder should identify the functions that will continue to be surveyed by the POA holder.

(5) The procedures used by the OP to notify the POA holder of non-conformities discovered at the suppliers facility, corrective action and follow-up.

(d) The POA should make arrangements that allow the competent authority to make investigation in accordance with 21.A.157 to include OP activities.

AMC No. 2 to 21.A.139(b)(1)(ii) Vendor and sub-contractor assessment, audit and control - Production Organisation Approval (POA) holder using other party supplier certification

21.A.139(b)(1)(ii)

1. General

Note:
For the purpose of this AMC, vendors and sub-contractors are hereafter referred to as 'suppliers', regardless of whether or not they hold a POA and audit and control is hereafter referred to as 'surveillance'.

Other party supplier certification is a method whereby a supplier contracts with an appropriately recognised or accredited Other Party (OP) for the purpose of obtaining a certification from that OP. Certification indicates that the supplier has satisfactorily demonstrated to meet the applicable standard on a continuing basis. OP certification results in placing the supplier on the OP list of certified organisations, or in the supplier receiving a certificate identifying the requirements that have been met. Periodic follow-up evaluations are conducted by the OP to verify continued compliance with the requirements of the applicable standard.

The production organisation is required by Part 21 to demonstrate that it has established and maintains a quality system that enables the organisation to ensure that each item produced conforms to the applicable design data and is in a condition for safe operation. To discharge this responsibility, the quality system should have, among other requirements, procedures to adequately carry out the assessment and surveillance of suppliers.

The assessment and surveillance of suppliers by an OP should be deemed to satisfy the requirements of 21.A.139(b)(1)(ii) when the conditions of this AMC are satisfied. The assessment and surveillance of suppliers by OP as part of supplier certification does not exempt the POA holder from its obligations under 21.A.165.

The supplier assessment and surveillance, corrective action and follow-up activity conducted at any of its supplier's facilities may be performed by OP.
The purpose of using an OP cannot be to replace the assessment, audit and control of the POA Holder. It is to allow an element (i.e. the assessment of the quality system) to be delegated to another organisation under controlled conditions.
The use of suppliers that are certified by OP in accordance with this AMC should be part of a production organisation quality system.

2 Approval by the competent authority

Implementing or changing procedures for using suppliers that are certified by an OP is a significant change to the quality system and requires approval in accordance with 21.A.147.

3 Conditions and criteria for using supplier certification for the supplier assessment and surveillance

(a) The POA holder should include the use of supplier certification for the supplier assessment and surveillance in the POA holder's quality system to demonstrate compliance with the applicable requirements of Part 21.

(b) Procedures required for use of supplier certification for the supplier assessment and surveillance should be consistent with other procedures of the POA holders' quality system.

(c) Procedures of the POA holder that uses supplier certification for the supplier assessment and surveillance should include the following:

(1) Listing of the OP that has certified or will certify suppliers and will conduct supplier assessment and surveillance or the scheme under which the accreditation of the OP is controlled. This listing should be maintained by the POA holder and made available to the competent authority upon request.

(2) A listing of the certified suppliers under surveillance by the OP and used by the POA holder. This listing should be maintained by the POA holder and made available to the competent authority upon request.

(3) The method used by the POA holder to evaluate and monitor the certification process of any OP certification body or OP certification scheme used. This applies not only to new suppliers, but also to any decision by the POA holder to rely on OP certification of current suppliers. The method should include the following as a minimum:

(i) Verification that certification standards and checklists are acceptable and applied to the applicable scope.

(ii) Verification that the OP is appropriately qualified and has sufficient knowledge, experience and training to perform its allocated tasks.

(iii) Verification that the OP surveillance frequency of the suppliers is commensurate with the complexity of the product and with the surveillance frequency established by the POA holder's suppliers control programme.

(iv) Verification that the suppliers' surveillance is conducted on-site by the OP.

(v) Verification that the surveillance report will be made available to the competent authority upon request.

(vi) Verification that the OP continues to be recognised or accredited.

(vii) Verification that the OP has access to applicable proprietary data to the level of detail necessary to survey suppliers functions.

Where the POA holder uses an OP accredited by a signatory to the European cooperation for Accreditation (EA) Multilateral Agreement and working in accordance with an aviation standard (e.g. EN 9104 series of requirements) that describes requirements for the OP certification, the items (ii), (iv) and (v) shall be deemed to be complied with:

(4) A definition to what scope the OP will conduct suppliers surveillance on behalf of the POA holder. If the OP replaces surveillance in part, the POA holder should identify the functions that will continue to be surveyed by the POA holder.

(5) Procedures that ensure that the POA is aware of the loss of an existing certification.

(6) Procedures that ensure that the POA holder is aware of non-conformities and has access to detailed information of these non-conformities.

(7) Procedures to evaluate the consequences of non-conformities and take appropriate actions.

(d) The POA should make arrangements that allow the competent authority to make investigation in accordance with 21.A.157 to include OP activities.

AMC-ELA No 1 to 21.A.139(b)(2) Quality system — Independent quality assurance function

21.A.139(b)(2)

The responsibility for the independent checking that the quality system functions in accordance with point 21.A.139(b)(1)(xiv) is specified within the organisation. The responsible person(s) establish(es) a schedule, which verifies all the elements of the quality system at least once a year. The schedule can be complemented by unplanned audits if needed. The person(s) responsible obtain(s) direct monitoring results and ensure(s) that corrective actions are taken when necessary.

GM-ELA No 1 to 21.A.139(b)(2) Quality system — Independent quality assurance function

21.A.139(b)(2)

The term ‘adequacy of procedures’ means that the quality system, through the use of the practised methods or procedures as documented, is capable of meeting the conformity objectives identified in point 21.A.139(a). This can be shown with the results from the implemented quality system, carried out in accordance with point 21.A.139(b)(1)(xiv). Independent quality assurance monitoring can be accomplished by structured experience exchanges, regular quality meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the development, or by other similar means.

The adequacy of the quality system should be assessed on the basis of the continued conformity of the product with the approved type design. If the practised methods and the level of documentation of procedures are not found to be adequate, a more detailed documented procedure may need to be implemented to rectify the situation.

GM No. 1 to 21.A.139(b)(2) Quality System - Independent quality assurance function

21.A.139(b)(2)

The quality assurance function which is part of the organisation is required to be independent from the functions being monitored. This required independence relates to the lines of reporting, authority and access within the organisation and assumes an ability to work without technical reliance on the monitored functions.

GM No. 2 to 21.A.139(b)(2) Quality System - Adequacy of procedures and monitoring function

21.A.139(b)(2)

Adequacy of procedures means that the quality system, through the use of the procedures as set forth, is capable of meeting the conformity objectives identified in 21.A.139(a).

The quality assurance function to ensure the above should perform planned continuing and systematic evaluations or audits of factors that affect the conformity (and, where r equired, safe operation) of the products, parts or appliances to the applicable design. This evaluation should include all elements of the quality system in order to demonstrate compliance with Part 21 Subpart G.

AMC-ELA No 1 to 21.A.143 Exposition

21.A.143

Note: The following provides the information, the acceptable level of detail and the format to be used for the production organisation exposition (POE), and this section is numbered in accordance with the numbering of point 21.A.143(a). If it is needed for completeness, the text of the implementing rule is quoted in italics.

The exposition should contain:

1 A statement signed by the accountable manager that confirms that the production organisation exposition and any associated manuals, which define the approved organisation’s compliance with this Subpart, will be complied with at all times.

2 The titles and the names of the managers accepted by the competent authority in accordance with point 21.A.145(c)(2). The titles and the names of the managers should include the accountable manager (AM), and a statement that this manager is accountable for all the tasks, even if the manager delegates some individual tasks. The delegation of tasks without a delegation of responsibility is not required to be shown within the

POE. Persons such as, for example, the quality manager (QM) and the production manager (PM) should only be identified within the POE if responsibilities are delegated to them as outlined by AMC-ELA No 1 to 21.A.145(c).

3 A statement that the AM is the formal point of contact with the competent authority unless other persons under the direct responsibility of the AM are identified.

4 An organisational chart if the AM delegates responsibilities. The organisational chart should identify the positions and the reporting lines of those persons who hold delegated responsibilities. In cases where all the responsibilities remain with the AM, even though individual tasks may be delegated, this delegation should be briefly described, and no organisational chart is necessary.

5 A list of the certifying staff. This may be identified by a reference to a separate source (e.g. a document, listing, intranet, etc.), and should be easily accessible to everyone concerned within the company.

6 A general description of the manpower resources. This can be provided by stating the approximate size of the organisation in full-time equivalents (FTEs).

7 A general description of the facilities. This should identify the addresses of the major places of activity. The 'major places of activity' are those locations where the major activities take place that finally lead to the completion of the product and the issuance of the statement of conformity/release certificate.

8 The general description of the organisation's scope of work should be provided as defined by point 21.A.151 (see GM-ELA No 1 to 21.A.151), on the basis of the product type(s).

9 The procedure for the notification of organisational changes. This can be provided through a reference to that procedure in the company manual (see also GM-ELA No 1 to 21.A.147).

10 The procedure for the notification of organisational changes to the competent authority, which can be provided by a declaration that the POE is kept up to date under the responsibility of the AM, when changes to the organisation occur that affect the POE. Amendments to the POE are released by the AM, and are distributed by following the implemented method for the control of documented information to the locations identified in a generic or document-specific distribution list, including distribution to the competent authority.

11 The description of the quality system and the procedures in the POE, which may use references to the company manual, or to any other document applied in the quality system (e.g. in accordance with ISO 9001, EN 9100, ASTM F2972 or other suitable standards). These references do not need to explicitly include the revision status of these documents.

12 The list of outside parties, which should contain the outside parties that operate under the quality system and the procedures of the manufacturer (i.e. the extended workbench).

13 The flight test operations manual (FTOM). The POE can use a reference to an FTOM that is adequate for the production flight testing of new production aircraft, if this is applicable. If both the design and manufacturing entities work within one consolidated flight test team, it is acceptable to have one set of FTOM procedures defined for the whole team.

GM-ELA No 1 to 21.A.143 Exposition

21.A.143

The purpose of the production organisation exposition (POE) is to provide in a concise and documented format the organisational relationships, responsibilities, terms of reference, and the associated authority, procedures, means and methods of the organisation.

The POE is not the top-level mechanism for organisational control and oversight, and it therefore does not need to provide revision-controlled links to referenced documents. The POE should provide a high-level summary of the organisation's control and oversight methods, and appropriate cross references that allow access to the manuals, procedures and instructions, if applicable.

The POE should be an accurate definition and description of the production organisation. The document does not require approval in itself, but it will be considered when approving the organisation.

The scope of the production organisation and the oversight is not limited to the locations that are identified in the POE, which only shows the 'major places of activity'.

The sublevel production location(s) does (do) not need to be identified in the POE. To ensure transparency to the authority, and in analogy to the management of external suppliers, at least those sublevel locations where manufactur-

ing processes are exercised that require close process control ('special processes') should be identified, but not necessarily as part of the POE. They may be identified within the company manual or in a separate listing.

The scope of work automatically includes the products and all the spare parts required for the identified products, without any further specifications or details. Capability lists are not required by Subpart G. Separate from the statement of scope itself, a listing is provided that identifies the type(s) produced by the approved production organisation.

Note: A POE template, which may be used for a small company (adapted to the company's specifics), is published by EASA.

When changes to the organisation occur that have an impact on the POE, the POE should be updated in accordance with the agreed procedure. Significant changes to the approved production organisation (as explained in GM-ELA No 1 to 21.A.147) require approval by the competent authority, and could also change the POE. The POE document, which is amended in accordance with the approved change, is not intended to be approved by the competent authority, and visual evidence of the approval of the POE document is not needed.

GM 21.A.143 Exposition - Production Organisation Exposition (POE)

21.A.143

The purpose of the POE is to set forth in a concise document format the organisational relationships, responsibilities, terms of reference, and associated authority, procedures, means and methods of the organisation.

The information to be provided is specified in 21.A.143(a). Where this information is documented and integrated in manuals, procedures and instruction, the POE should provide a summary of the information and an appropriate cross-reference.

The competent authority requires the POE to be an accurate definition and description of the production organisation. The document does not require approval in itself, but it will be considered as such by virtue of the approval of the organisation.

When changes to the organisation occur, the POE is required to be kept up to date per a procedure, laid down in the POE. Significant changes to the organisation (as defined in GM 21.A.147(a)) should be approved by the competent authority prior to update of the POE.

When an organisation is approved against any other implementing rule containing a requirement for an exposition, a supplement covering the differences may suffice to meet the requirements of Part 21 Subpart G except that the supplement should have an index identifying where those parts missing from the supplement are covered. Those items then formally become part of the POE. In any combined documents the POE should be easily identifiable.

AMC-ELA No 1 to 21.A.143(a)(13) Exposition — Policies and procedures related to flight test

21.A.143(a)(13)

The objective of this AMC is to identify the items that need to be considered for a safe flight test, that need to be practised, and, if necessary, defined in the flight test operations manual (FTOM) or related procedures, templates or checklists. Those items are the following:

- A flight test plan, completed flight conditions, and the related Forms 18a and 20b for the purpose of conducting the production flight testing of a new production aircraft that are provided as part of the approved type design. These define:
  - a crewing policy, including its composition, and any competence, currency and flight time limitations;
  - procedures for the carriage of persons other than crew members, and for flight test training;
  - a policy for risk and safety management, and associated methodologies that are adequate for the purpose of the flight;
  - a definition of the instruments and equipment to be carried on board during this test flight; and
  - a list of the records that need to be produced when conducting this flight test.
- This flight test plan constitutes the FTOM for this limited purpose.

AMC-ELA No 2 to 21.A.143(a)(13) Exposition — Policies and procedures related to flight test

21.A.143(a)(13)

For companies to which AMC-ELA No 1 to 21.A.143(a)(13) is not appropriate, the POA may implement policies and procedures for conducting these activities that include a proportionate and efficient risk and safety management system. This approach is documented either within a separate FTOM or as an integral part of any other valid manual of the organisation, such as the company manual, or any other relevant quality manual. The FTOM, or its equivalent, should be proportionate to the complexity of the aircraft and the organisation.

The risk and safety management system, documented within the FTOM, or its equivalent, covers the following aspects:

- The definition of the key qualifications, responsibilities and accountabilities for the staff involved in conducting the flight test, and should cover at least:
  - The Head of Flight Test (HoFT), who coordinates all the activities related to flight test, and who assumes the responsibility for flight testing (which can be shared with other management positions within the PO);
  - The Flight Test Engineer, who manages the individual flight tests (or campaigns);
  - The Test Pilot, who conducts any flight tests; and
  - The Flight Test Mechanic, who conducts all the maintenance tasks and makes all the configuration changes to the test aircraft.

  One person who has adequate qualifications may act in more than one role. The HoFT should have a direct reporting line to the AM.
- A method that provides practical guidance to conduct a hazard assessment to classify flight tests according to the risks involved. At least two categories should be identified:
  - Category 1: for high-risk flight tests; and
  - Category 2: for medium- and low-risk flight tests.
- Definitions of generic risk mitigation strategies, such as the use of minimum and maximum altitudes or airspeed safety margins, and safety rules to be obeyed for the typical major test phases and missions.
- The identification of the aircraft-related safety equipment that needs to be available, including references to the maintenance requirements of this equipment.
- The policy on how to alert and involve rescue services, such as the fire brigade or emergency physicians, in order to provide sufficiently short reaction times.
- Crew qualifications, including requirements for their qualifications to be current and crew (refresher) training, as required.
- For aircraft with MTOMs of 2 000 kg or more:
  - the provisions of Appendix XII to Part-21 apply;
  - the minimum flight experience per year should be:
    - for pilots: 50 hours. In addition:
      - for pilots who have flight test ratings, the 50 hours should include 20 flight test hours in any flight test category;
      - for pilots to perform Category 3 flight tests, their flight test experience should be expressed in terms of the number of flights that led to the issuing of a certificate of airworthiness (CofA) (e.g. first flights);
      - for pilots to perform Category 4 flight tests, their minimum flight test experience should be proportionate to the activity envisaged.
- Crew composition and duty time limitations that are adequate for the kind of testing and the risk category of the flight tests conducted by the POA.

The procedural aspects, documented within the FTOM, or its equivalent, should cover the following aspects:

- The initiation and planning of a flight test activity, including, for example, but not limited to:
  - hazard analysis;
  - detailed flight test planning;
  - the generation and approval of flight conditions;
  - the definition and verification of the test-aircraft configuration;
  - the preparation of the aircraft;
  - the integration, calibration and verification of any flight test equipment;

- verification of the fitness of the aircraft for flight;
- issuing or obtaining a PtF;
- the preflight briefing, and conducting the flight test; and
- debriefing and data reporting.

- The identification of all the documents and records that are required to be generated or maintained in relation to the flight test, including the definitions for the authority to sign.
- Identification of how training for flight tests is organised.

The definition of the methods required may be provided in different ways including but not limited to flow charts, process descriptions, forms that are detailed enough to enforce adherence to the required workflow, workflow implementation in IT-based ERP systems, or similar means.

The implementation of the standard FTOM, including its associated process definitions and forms, ensures that there will be adherence to this AMC, and hence that there will be compliance with the relevant requirements of Part-21.

Any flight tests that are subcontracted to a third party should comply with the FTOM of the POA, unless the third party has established an FTOM that is in compliance with Part-21, and its use has been agreed between the two organisations.

AMC to 21.A.143, 21.A.243, 21.A.14(b), 21.A.112B(b) and 21.A.432B(b)
Flight Test Operations Manual (FTOM)

21.A.143
21.A.243
21.A.14(b)
21.A.112B(b)
21.A.432B(b)

1. General
   a. Scope: The FTOM covers flight test operations.
   The FTOM complexity should be proportionate to the aircraft and the organisation complexity.
   b. Format
   The FTOM may:
   - be included in the Design Organisation Approval (DOA)/Production Organisation Approval (POA)/Alternative Procedure to DOA (APDOA) documents, or
   - be a separate manual.

   The FTOM may make reference to other documents to cover the contents listed below, e.g. for record-keeping.
   c. Use by contractors or sub-contractors:
   When flight tests are performed by contractors or sub-contractors, they should comply with the FTOM of the primary organisations, unless they have established an FTOM in compliance with Part-21, the use of which has been agreed between the two organisations.
2. The FTOM should contain the following elements:
   a. Exposition (not applicable in the case of APDOA):
   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 people 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 coordination for the establishment and update of a Flight Test Programme.
   b. Risk and safety management:
   The FTOM should describe the organisation's policy in relation to risk and safety assessment, mitigation and associated methodologies.
   c. Crew members:
   According to the flight test category, the FTOM should describe the organisation's policy on the composition of the crew (including the need to use a Lead Flight Test Engineer (LFTE)) and the competency and currency of its flight test crew members, including procedures for appointing crew members for each specific flight.

All crew members should be listed in the FTOM.

A flight time limitation policy should be established.

d. 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 on-board, 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.

e. 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.

f. Documents:

The FTOM should list the documents to be produced for flight test, and include (or refer to) the procedures for their issue, 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. Category 1);
  - 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 the aircraft during flight test;

(iii) record-keeping: the FTOM should describe the policy relative to record-keeping.

g. 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 issue of permits to fly in accordance with Subpart P.

h. 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.

For aircraft for which Appendix XII is applicable, minimum flight experience by year should be:

- for pilots: 50 hours. In addition:
  - for pilots with a flight test rating, the 50 hours should include 20 flight test hours in any flight test category.
  - for pilots performing a Category 3 flight test, the flight test experience should be expressed in terms of a number of flights leading to the issue of a Certificate of Airworthiness (CofA) (e.g. first flights).
  - for pilots performing a Category 4 flight test, the minimum flight test experience should be proportionate to the activity envisaged.
- for LFTEs: 10 flight test hours in any flight test category.

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.

<ED Decision 2015/026/R , new AMC>

AMC-ELA No 1 to 21.A.145(a) Approval requirements — General

21.A.145(a)

The adequacy of the infrastructure and staffing may be demonstrated by producing conforming products (on the basis that the type inspection results are part of the production final acceptance process), at the anticipated production rate, and with an adequate staff workload.

GM 21.A.145(a) Approval Requirements

21.A.145(a)

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, air pollution.

Equipment and tools should be such as to enable all specified tasks to be accomplished in a repeatable manner without detrimental effect. Calibration control of equipment and tools which affect critical dimensions and values should demonstrate compliance with, and be traceable to, national or international standards.

Sufficient personnel means that the organisation has for each function according to the nature of the work and the production rate, a sufficient quantity of qualified personnel to accomplish all specified manufacturing tasks and to attest the conformity. Their number should be such that airworthiness consideration may be applied in all areas without undue pressure.

An evaluation of the competence of personnel is performed as part of the quality system. This should include, where appropriate, verification that specific qualification standa rds have been implemented, for example NDT, welding, etc. Training should be organised to establish and maintain the personal competence levels determined by the organisation to be necessary.

AMC-ELA No 1 to 21.A.145(b) Approval requirements — Airworthiness, noise, fuel venting and exhaust emissions data

21.A.145(b)

For applicants whose design and production entities operate in one consolidated team, and for which the applicable design data is provided as part of the approved type design data, the availability of all the necessary airworthiness, noise, fuel venting and exhaust emissions data is considered to be met.

In all other cases, in accordance with the practised methods and procedures that were established as part of the quality system, the PO can demonstrate that the production data contains all the necessary data to determine that there is conformity with the applicable design data, and that this data is kept up to date and is available to the relevant personnel.

GM 21.A.145(b)(2) Approval Requirements - Airworthiness, noise, fuel venting and exhaust emissions /production data procedures

21.A.145(b)(2)

1 When a POA holder/applicant is developing its own manufacturing data, such as computer based data, from the design data package delivered by a design organisation, procedures are required to demonstrate the right transcription of the original design data.

2 Procedures are required to define the manner in which airworthiness, noise, fuel venting and exhaust emissions data is used to issue and update the production/quality data, which determines the conformity of products, parts and appliances. The procedure must also define the traceability of such data to each individual product, part or appliance for the purpose of certifying condition for safe operation and issuing a Statement of Conformity or EASA Form 1.

AMC-ELA No 1 to 21.A.145(c) Approval requirements — Management and staff

21.A.145(c)

EASA Form 4 should be used to nominate the accountable manager (AM) to the competent authority. Further management staff members are not required to be nominated if the AM elects to take all the required responsibilities (e.g. including quality manager responsibilities). If the AM delegates any of the responsibilities as defined in 21.A.145(c) to sublevel managers, the sublevel managers who receive this delegation have to be nominated to the competent authority by the use of EASA Form 4, and have to be listed in the POE.

It should be demonstrated that the AM has sufficient power within the company to control the production activity on the basis of the available resources, up to the point of stopping production when adequate resources cannot be provided.

The AM may delegate individual tasks to sublevel managers, while still maintaining his/her responsibilities and the power to make decisions; at the sublevel, in this case, the manager should monitor the sublevel activities. Such delegation of tasks to sublevels is defined internally and does not need to be formally declared to the competent authority.

GM 21.A.145(c)(1) Approval Requirements - Accountable manager

21.A.145(c)(1)

Accountable manager means the manager who is responsible, and has corporate authority for ensuring that all production work is carried out to the required standard. This funct ion may be carried out by the Chief Executive or by another person in the organisation, nominated by him or her to fulfil the function provided his or her position and authority in the organisation permits to discharge the attached responsibilities.

The manager is responsible for ensuring that all necessary resources are available and properly used in order to produce under the production approval in accordance with Part 21 Section A Subpart G.

The manager needs to have sufficient knowledge and authority to enable him or her to respond to the competent authority regarding major issues of the production approval and implement necessary improvements.

The manager needs to be able to demonstrate that he or she is fully aware of and supports the quality policy and maintains adequate links with the quality manager.

GM 21.A.145(c)(2) Approval Requirements - Responsible managers

21.A.145(c)(2)

The person or persons nominated should represent the management structure of the organisation and be responsible for all functions as specified in Part 21 Section A Subpart G. It therefore follows that, depending on the size of the Part 21 Section A Subpart G organisation, the functions may be subdivided under individual managers (and in fact may be further subdivided) or combined in a variety of ways.

The competent authority requires the nominated managers to be identified and their credentials submitted on an EASA Form 4 (see EASA Form 4 for Production Organisations on the EASA website under: http://easa.europa.eu/certification/application-forms.php) to the competent authority in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the production activities as performed by the Part 21 Section A Subpart G organisation.

The responsibilities and the tasks of each individual manager are required to be clearly defined, in order to prevent uncertainties about the relations, within the organisation. In the case of organisation structures where staff-members are responsible to more than one person, as for instance in matrix and project organisations, responsibilities of the managers should be defined in such a way that all responsibilities are covered.

Where a Part 21 Section A Subpart G organisation chooses to appoint managers for all or any combination of the identified Part 21 functions because of the size of the undertaking, it is necessary that these managers report ultimately to the accountable manager. In cases where a manager does not directly report to the accountable manager, he or she should have a formally established direct access to the accountable manager.

One such manager, normally known as the quality manager is responsible for monitoring the organisation's compliance with Part 21 Section A Subpart G and requesting remedial action as necessary by the other managers or the accountable manager as appropriate. He or she should have a direct access to the accountable manager.

AMC 21.A.145(d)(1) Approval Requirements - Certifying staff

21.A.145(d)(1)

1 Certifying Staff are nominated by the production organisation to ensure that products, parts and/or appliances qualify for Statements of Conformity or Release Certificates. Certifying Staff positions and numbers are to be appropriate to the complexity of the product and the production rate.

2 The qualification of certifying staff is based on their knowledge, background and experience and a specific training (or testing) established by the organisation to ensure that it is appropriate to the product, part, or appliance to be released.

3 Training must be given to develop a satisfactory level of knowledge of organisation procedures, aviation legislation, and associated implementing rules, CS and GM, relevant to the particular role.

4 For that purpose, in addition to general training policy, the organisation must define its own standards for training, including pre-qualification standards, for personnel to be identified as certifying staff.

5 Training policy is part of the Quality System and its appropriateness forms part of investigation by the competent authority within the organisation approval process and subsequent surveillance of persons proposed by managers.

6 The training must be updated in response to experience gained and changes in technology.

7 A feedback system to ascertain that the required standards are being maintained must be put in place to ensure the continuing compliance of personnel to authorisation requirements.

8 For release of products, parts or appliances, the responsibilities to issue statements of conformity/release certificates (EASA Form 1) or permit to fly including approval of flight conditions are allocated to the certifying staff identified in 21.A.145 (d)(2).

9 The competent authority holds the right to reject those personnel, appointed by the organisation, if found to have inappropriate experience or not to otherwise comply with its requirements.

AMC-ELA No 1 to 21.A.145(d)(1) Approval requirements — Certifying staff

21.A.145(d)(1)

Certifying staff (CS) are nominated by the production organisation to ensure that products qualify for statements of conformity or release certificates. The number of CS and their positions within the organisation should be adequate to perform their duties and commensurate with the complexity of the product and the production rate.

The nomination of the CS is based on their knowledge, background and experience, and specific training (or testing) is established by the organisation to ensure that the CS members are appropriately qualified for the product, part, or appliance to be released. This can be ensured by utilising appropriately qualified Part-66 licence holders as inspectors, or inspectors who are qualified to comparable standards that are agreed with the relevant competent authority.

The training of personnel who support CS at the subcomponent level may be ensured by on-the-job training.

For the release of products, parts or appliances, the responsibilities for issuing statements of conformity or release certificates (EASA Form 52, EASA Form 1), or PtFs and approvals of flight conditions (if applicable), are allocated under the responsibility of the AM to individuals that are nominated as CS.

AMC 21.A.145(d)(2) Approval Requirements - Record of certifying staff

21.A.145(d)(2)

1 The following is the minimum information to be recorded in respect of each certifying person:
- a Name
- b Date of Birth
- c Basic Training and standard attained
- d Specific Training and standard attained
- e If appropriate - Continuation Training
- f Experience
- g Scope of the authorisation
- h Date of first issue of the authorisation
- i If appropriate - expiry date of the authorisation
- j Identification Number of the authorisation

2 The record may be kept in any format and must be controlled by an internal procedure of the organisation. This procedure forms part of the quality system.

3 Persons authorised to access the system must be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner and that confidential records cannot become accessible to unauthorised persons.

4 The certifying person must be given reasonable access on request to his or her own records.

5 Under the provision of 21.A.157 the competent authority has a right of access to the data held in such a system.

6 The organisation must keep the record for at least two years after the certifying person has ceased employment with the organisation or withdrawal of the authorisation, whichever is the sooner.

AMC-ELA No 1 to 21.A.145(d)(2) Approval requirements — Records of certifying staff

21.A.145(d)(2)

The following data should be recorded for each certifying staff (CS) member:

(a) name;
(b) date of birth;
(c) basic training and the standard attained;
(d) specific training and the standard attained;
(e) if appropriate, continuation training;
(f) experience;
(g) scope of the authorisation;
(h) date of first issue of the authorisation;
(i) if applicable, the expiry date of the authorisation;
(j) identification (number) of the authorisation;
(k) documented acceptance of the nomination.

The above information is deemed to be sufficient to provide the CS with evidence of their scope of authorisation.

The record of this data may be kept in any format. Each CS member should be given reasonable access on request to his or her own records.

The organisation should keep these records for at least 2 years after the CS member has ceased to be employed by the organisation, or 2 years after the withdrawal of their authorisation, whichever occurs first.

AMC 21.A.145(d)(3) Approval requirements - Evidence of authorisation

21.A.145(d)(3)

1 The authorisation document must be in a style that makes its scope clear to the certifying staff and any authorised person who may require to examine the authorisation. Where codes are used to define scope, an interpretation document should be readily available.

2 Certifying staff are not required to carry the authorisation document at all times but should be able to make it available within a reasonable time of a request from an authorised person. Authorised persons include the competent authority.

AMC-ELA No 1 to 21.A.145(d)(3) Approval requirements — Evidence of authorisation

21.A.145(d)(3)

Evidence of the scope of the authorisation may be provided in a reasonably accessible way within the company, so that a staff member that needs to be aware of the authorisation can verify their status whenever needed. This can be achieved by the provision of accessible listings of the nominated CS members, or by other means. The issuing of individual badges or passes is not required.

GM-ELA No 1 to 21.A.147 Changes to the approved production organisation

21.A.147

The company should consider whether to verify the classification of changes with the competent authority.

The following changes are considered to be significant and require approval by the competent authority prior to the implementation of the changes:

- significant changes to the production capacity or methods;
- changes in the structure of the organisation, especially those parts of the organisation that are in charge of quality;
- a change of the accountable manager (AM) or of any other person nominated under point 21.A.145(c)(2);
- changes in the production or quality systems that may have an important impact on the conformity/airworthiness of each product, part or appliance;
- changes in the placement or control of significant subcontracted work or supplied parts;

- relocation of the major place of activities to a different geographic location, city, airfield or similar;
- changes in the scope of approval; and
- changes in ownership.

GM 21.A.147(a) Changes to the approved production organisation - Significant changes

21.A.147(a)

1 Changes to be approved by the competent authority include:
- Significant changes to production capacity or methods.
- Changes in the organisation structure especially those parts of the organisation in charge of quality.
- A change of the accountable manager or of any other person nominated under 21.A.145 (c)(2).
- Changes in the production or quality systems that may have an important impact on the conformity/airworthiness of each product, part or appliance.
- Changes in the placement or control of significant sub-contracted work or supplied parts.

2 To ensure that changes do not result in non-compliance with Part 21 Section A Subpart G it is in the interest of both the competent authority and the approval holder to establish a relationship and exchange information that will permit the necessary evaluation work to be conducted before the implementation of a change. This relationship should also permit agreement on the need for variation of the terms of approval (ref 21.A.143(a)(9)).

3 Where a change of name or ownership results in the issue of a new approval the investigation will normally take account of the competent authority's knowledge and information from the preceding approval.

4 Changes of location are addressed in 21.A.148 and changes of ownership in 21.A.149, change of scope of approval in 21.A.153.

AMC 21.A.148 Changes of location - Management during change of location

21.A.148

1 The relocation of any work, to an unapproved location, or a location with inappropriate scope of approval, constitutes a change of significance to the organisation and requires approval by the competent authority as prescribed in 21.A.147. An unapproved relocation will invalidate the production organisation approval, and may necessitate re-application for any similar approval required at the new location. However, suitable transitional arrangements may be agreed with the competent authority, in advance of the relocation, which can allow continuation of the approval.

2 When an organisation expands its facility to include a new production location or moves parts of its production to a new location the production organisation approval may continue in force, but the approval does not include the new location until the competent authority has indicated its satisfaction with the arrangements.

3 For a change in location, taking an extended period of time, suitable transitional arrangements would require preparation of a co-ordination plan for the removal. The plan must, at least, identify the following:
- a A clearly identified person, or group of persons, responsible for co-ordinating the removal and acting as focal point for communication with all parties, including the competent authority.
- b The basis of the co-ordination plan, e.g., whether by product or area.
- c Planned timing of each phase of relocation.
- d Arrangements for maintaining the standards of the approval up to the point where the production area is closed down.
- e Arrangements for verifying continued production quality upon resumption of work at the new location.
- f Arrangements for check and/or re-calibration of inspection aids or production tools and jigs before resuming production.
- g Procedures which ensure that goods are not released from the new location until their associated production and quality systems have been verified.
- h Arrangements for keeping the competent authority informed of progress with the relocation.

4 From the co-ordination plan, the competent authority can determine the points at which it wishes to conduct investigation.

5 If an agreed co-ordination plan is in operation, the competent authority will normally allow the existing approval to remain in force and will, where appropriate, grant an additional approval to cover the new address for the duration of the move.

GM-ELA No 1 to 21.A.148 Changes of location

21.A.148

A change of location of the major place of activities to a different geographic location, city, airfield or similar is deemed to be of significance, and is treated in line with GM-ELA No 1 to 21.A.147.

No other changes related to the location of the company, including a relocation within one building, or to a neighbouring building on the same premises, or similar, are considered to be of significance, as long as the parameters that are critical to the environment, infrastructure or equipment remain the same, and are under the responsibility of the accountable manager (AM). Any other alterations will be addressed during the subsequent periodical authority oversight.

GM 21.A.149 Transferability

21.A.149

Transfer of approval would normally only be agreed in cases where the ownership changes but the organisation itself remains effectively unchanged. For example:

An acceptable transfer situation could be a change of company name (supported by the appropriate certificate from the National Companies Registration Office or equivalent) but with no changes to site address, facilities, type of work, staff, accountable manager or person nominated under 21.A.145.

Alternatively, in the event of receivership (bankruptcy, insolvency or other equivalent legal process) there may be good technical justification for continuation of the approval provided that the company continues to function in a satisfactory manner in accordance with their POE. It is likely that at a later stage the approval might be voluntarily surrendered or the organisation transferred to new owners in which case the former paragraphs apply. If it does not continue to operate satisfactorily then the competent authority could suspend or revoke the approval under 21.B.245.

In order for the competent authority to agree to a transfer of approval, it will normally prescribe it as a condition in accordance with 21.A.147(b) that the obligations and responsibilities of the former organisation should be transferred to the new organisation, otherwise transfer is not possible and application for a new approval will be required.

GM 21.A.151 Terms of approval - Scope and categories

21.A.151

Terms of approval document(s) will be issued by the competent authority under 21.A.135 to identify the scope of work, the products, and/or categories for which the holder is entitled to exercise the privileges defined in 21.A.163.

The codes shown against each scope of work item are intended for use by the competent authority for purposes such as managing, administering and filing details of approvals. It may also assist in the production and publication of a list of approval holders.

The scope of work, the Products, Parts, or Appliances for which the POA holder is entitled to exercise the privileges defined in 21.A.163 will be described by the competent authority as follows:

FOR PRODUCTS:

1 General area, similar to the titles of the corresponding certification codes.

2 Type of Product, in accordance with the type-certificate.

FOR PARTS AND APPLIANCES:

1 General area, showing the expertise, e.g., mechanical, metallic structure.

2 Generic type, e.g., wing, landing gear, tyres.

SCOPE OF WORK		PRODUCTS/CATEGORIES
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12	Large Aeroplanes Small Aeroplanes Large Helicopters Small Helicopters Gyroplanes Sailplanes Motor Gliders Manned Balloons Airships Light Sport Aeroplanes Very Light Aeroplanes Other	
B1 B2 B3 B4	Turbine Engines Piston Engines APU's Propellers	' ' '
C1	Appliances:	State appliance generic types (e.g., Tyres, Altimeter, etc.) Examples include: Avionic, Com/Nav/Pulse Computer System, Aircraft/Engine/Avionic Instruments, Mechanical/Electrical/ Gyroscopic/Electronic Mechanical/Hydraulic/Pneumatic
C2	Parts:	State part generic types (e.g., Wing, Landing Gear, etc.) Examples include: Structural, Metallic/non-metallic Mechanical/Hydraulic/Pneumatic Electrical Electronic
D1 D2	Maintenance Issue of permit to fly	State aircraft types State aircraft types

AMC 21.A.153 Changes to the terms of approval - Application for a change to the terms of approval

21.A.153

EASA Form 51 (see AMC No 1 to 21.B.240) must be obtained from the competent authority and completed in accordance with the procedures of the POE.

The information entered on the form is the minimum required by the competent authority to assess the need for change of the production organisation approval.

The completed form and an outline of the changed POE, and details of the proposed change to POA terms of approval must be forwarded to the competent authority.

AMC-ELA No 1 to 21.A.153 Changes to the terms of approval — Application for a change to the terms of approval

21.A.153

EASA Form 51 (see AMC No 1 to 21.B.240) should be obtained from the competent authority and completed in accordance with the instructions provided by the competent authority. The information entered on the form is needed by the competent authority in order to assess whether the production organisation approval is to be amended. The completed form should be forwarded to the competent authority. The applicant and the competent authority can agree on whether the assessment for a change in approval can be completed via a desktop audit or through a surveillance audit.

GM 21.A.157 Investigations - Arrangements

21.A.157

The arrangements made by the applicant for, or holder of an approval under Part 21 Section A

Subpart G should allow the competent authority to make investigations that include the complete production organisation including partners, sub-contractors and suppliers, whether they are in the State of the applicant or not.

The investigation may include; audits, enquiries, questions, discussions and explanations, monitoring, witnessing, inspections, checks, flight and ground tests and inspection of completed products, parts or appliances produced under the POA.

In order to maintain its confidence in the standards achieved by a POA holder or applicant the competent authority may make an investigation of a sample product part or appliance and its associated records, reports and certifications.

The arrangements should enable the organisation to give positive assistance to the competent authority and co-operate in performing the investigation during both initial assessment and for the subsequent surveillance to maintain the POA.

Co-operation in performing investigation means that the competent authority has been given full and free access to the facilities and to any information relevant to demonstrate compliance to Part 21 Section A Subpart G requirements, and assistance (personnel support, records, reports, computer data, etc., as necessary).

Assistance to the competent authority includes all appropriate means associated with the facilities of the production organisation to allow the competent authority to perform these investigations, such as the availability of a meeting room, office and personnel support, documentation and dat a, and communication facilities, all properly and promptly available as necessary.

The competent authority seeks to have an open relationship with the organisation and suitable liaison personnel should be nominated to facilitate this, including suitable representative(s) to accompany competent authority staff during visits not only at the organisations own facilities but also at sub-contractors, partners or suppliers.

GM-ELA No 1 to 21.A.157 Investigations — Arrangements

21.A.157

The production organisation is encouraged to coordinate with the competent authority on any investigations that focus on issues that could result in unsafe conditions.

The production organisation grants to the competent authority full and free access to the facilities and to any information that is relevant to demonstrate the conformity of the product to the approved type design, and it provides assistance (personnel support, records, reports, computer data, etc., as necessary) to the competent authority during the investigation.

In this context, assistance to the competent authority includes providing all the appropriate means that are necessary to allow the competent authority to perform these investigations, such as making available a meeting room, office and personnel support, documentation and data, and communication facilities, which should all be properly and promptly made available as necessary.

GM-ELA No 1 to 21.A.158 Findings

21.A.158

An uncontrolled non-compliance with the applicable design data is a non-compliance that:

- cannot be discovered through systematic analysis; or
- prevents the identification of the affected products, parts, appliances, or materials.

A finding may only be classified as level 1 if the non-compliance has an effect on the condition of the aircraft.

Any failure to allow the competent authority to have access to facilities to conduct investigations should be classified as a level 1 finding.

It is recommended that the company should reach agreement with the competent authority on the administrative closure of level 2 findings at regular surveillance intervals.

GM No. 1 to 21.A.158(a) Uncontrolled non-compliance with applicable design data

21.A.158(a)

An uncontrolled non-compliance with applicable design data is a non-compliance:

- that can not be discovered through systematic analysis; or
- that prevents identification of affected products, parts, appliances, or material.

GM No. 2 to 21.A.158(a) Examples of level one findings

21.A.158(a)

Examples of level one findings are non-compliances with any of the following points, that could affect the safety of the aircraft:

21.A.139, 21.A.145, 21.A.147, 21.A.148, 21.A.151, 21.A.163, 21.A.165(b), (c), (d), (e), (f) and (g).

It should be anticipated that a non-compliance with these points is only considered a level one finding when objective evidence has been found that this finding is an uncontrolled non-compliance that could affect the safety of the aircraft.

In addition, the failure to arrange for investigations under 21.A.157, in particular to obtain access to facilities, after denial of one written request should be classified as a level one finding.

GM 21.A.159(a)(3) Evidence of a lack of satisfactory control

21.A.159(a)(3)

A positive finding by the competent authority of:

1 an uncontrolled non-compliance with type design data affecting the airworthiness of product part or appliance
2 an incident/accident identified as caused by POA holder
3 non-compliance with the POE and its associated procedures which could affect conformity of manufactured items to design data
4 insufficient competence of certifying staff
5 insufficient resources in respect of facilities, tools and equipment
6 insufficient means to ensure good production work standards

7 a lack of effective and timely response to prevent a recurrence of any of point 1 to 6.

AMC No 1 to 21.A.163(c) Computer generated signature and electronic exchange of the EASA Form 1

21.A.163(c)

1 Submission to the competent authority

Any POA holder/applicant intending to implement an electronic signature procedure to issue EASA Form 1 and/or to exchange electronically such data contained on the EASA Form 1, should document it and submit it to the competent authority as part of the documents attached with its exposition.

2 Characteristics of the electronic system generating the EASA Form 1

The electronic system should:

- guarantee secure access for each certifying staff;
- ensure integrity and accuracy of the data certified by the signature of the Form and be able to show evidence of the authenticity of the EASA Form 1 (recording and record keeping) with suitable security, safeguards and backups;
- be active only at the location where the part is being released with an EASA Form 1;
- not permit to sign a blank form;
- provide a high degree of assurance that the data has not been modified after signature (if modification is necessary after issuance, i.e. re-certification of a part), a new form with a new number and reference to the initial issuance should be made); and
- provide for a 'personal' electronic signature, identifying the signatory. The signature should be generated only in the presence of the signatory.

An electronic signature means data in electronic form which are attached to or logically associated with other electronic data and which serve as a method of authentication and should meet the following criteria:

- it is uniquely linked to the signatory;
- it is capable of identifying the signatory;
- it is created using means that the signatory can maintain under their sole control.

The electronic signature is defined as an electronically generated value based on a cryptographic algorithm and appended to data in a way to enable the verification of the data's source and integrity.

POA holders/applicants are reminded that additional national and/or European requirements may need to be satisfied when operating electronic systems. 'Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures', as last amended may constitute a reference.

The electronic system should be based on a policy and management structure (confidentiality, integrity and availability), such as:

- administrators, signatories;
- scope of authorisation, rights;
- password and secure access, authentication, protections, confidentiality;
- track changes;
- minimum blocks to be completed, completeness of information;
- archives;
- etc.

The electronic system generating the EASA Form 1 may contain additional data such as:

- manufacturer code;
- customer identification code;
- workshop report;
- inspection results;
- etc.

3 Characteristics of the computer generated signature

To facilitate understanding and acceptance of the EASA Form 1 released with an electronic signature, the following statement should be in Block 13b: 'Electronic Signature on File'.

In addition to this statement, it is accepted to print or display a signature in any form such as a representation of the hand-written signature of the person signing (i.e. scanned signature) or their name.

When printing the electronic form, the EASA Form 1 should meet the general format as specified in Appendix I to Part 21. A watermark-type 'PRINTED FROM ELECTRONIC FILE' should be printed on the document.
When the electronic file contains a hyperlink to data, required to determine the airworthiness of the item(s), the data associated to the hyperlink, when printed, should be in a legible format and be identified as a reference from the EASA Form 1.
Additional information not required by the EASA Form 1 completion instructions may be added to the printed copies of EASA Form 1 as long as the additional data do not prevent a person from filling out, issuing, printing, or reading any portion of the EASA Form 1. This additional data should be provided only in block 12 unless it is necessary to include it in another block to clarify the content of that block.

4. Electronic exchange of the electronic EASA Form 1
The electronic exchange of the electronic EASA Form 1 should be accomplished on a voluntary basis. Both parties (issuer and receiver) should agree on electronic transfer of the EASA Form 1.
For that purpose, the exchange needs to include:

- all data of the EASA Form 1, including data referenced from the EASA Form 1;
- all data required for authentication of the EASA Form 1. In addition, the exchange may include:
- data necessary for the electronic format;
- additional data not required by the EASA Form 1 completion instructions, such as manufacturer code, customer identification code.

The system used for the exchange of the electronic EASA Form 1 should provide:

- a high level of digital security; the data should be protected, unaltered or uncorrupted;
- traceability of data back to its source should be possible.

Trading partners wishing to exchange EASA Form 1 electronically should do so in accordance with these means of compliance stated in this document. It is recommended that they use an established, common, industry method such as Air Transport Association (ATA) Spec 2000 Chapter 16.

The applicant(s) is/are reminded that additional national and/or European requirements may need to be satisfied when operating the electronic exchange of the electronic EASA Form 1.

The receiver should be capable of regenerating the EASA Form 1 from the received data without alteration; if not the system should revert back to the paper system.

When the receiver needs to print the electronic form, refer to the subparagraph 3 above.

AMC No 2 to 21.A.163(c) Completion of the EASA Form 1

21.A.163(c)

EASA Form 1 Block 8 'Part Number'

The part number as it appears on the item, is usually defined in the design data; however in the case of a kit of parts, media containing software or any other specific condition of supply may be defined in production data developed from design data. Information about the contents of the kit or media may be given in block 12 or in a separate document cross-referenced from block 12.

EASA Form 1 Block 12 'Remarks'

Examples of conditions which would necessitate statements in block 12 are:

- When the certificate is used for prototype purposes the following statement must be entered at the beginning of block 12:
'NOT ELIGIBLE FOR INSTALLATION ON IN-SERVICE TYPE-CERTIFICATED AIRCRAFT'.
- Re-certification of items from 'prototype' (conformity only to non-approved data) to 'new' (conformity to approved data and in a condition for safe operation) once the applicable design data is approved.
The following statement must be entered in block 12:
RE-CERTIFICATION OF ITEMS FROM 'PROTOTYPE' TO 'NEW':
THIS DOCUMENT CERTIFIES THE APPROVAL OF THE DESIGN DATA [insert TC/STC number, revision level], DATED [insert date if necessary for identification of revision status], TO WHICH THIS ITEM (THESE ITEMS) WAS (WERE) MANUFACTURED.
- When a new certificate is issued to correct error(s) the following statement must be entered in block 12:
'THIS CERTIFICATE CORRECTS THE ERROR(S) IN BLOCK(S) [enter block(s) corrected] OF THE

CERTIFICATE [enter original tracking number] DATED [enter original issuance date] AND DOES NOT COVER CONFORMITY/ CONDITION/RELEASE TO SERVICE'.

Examples of data to be entered in this block as appropriate:

- For complete engines, a statement of compliance with the applicable emissions requirements current on the date of manufacture of the engine.
- For ETSO articles, state the applicable ETSO number.
- Modification standard.
- Compliance or non-compliance with airworthiness directives or Service Bulletins.
- Details of repair work carried out, or reference to a document where this is stated.
- Shelf life data, manufacture date, cure date, etc.
- Information needed to support shipment with shortages or re-assembly after delivery.
- References to aid traceability, such as batch numbers.
- In case of an engine, if the Competent Authority has granted an emissions production cut-off exemption the record: '["NEW OR SPARE"] ENGINE EXEMPTED FROM NOx EMISSIONS PRODUCTION CUT-OFF REQUIREMENT'.

<ED Decision 2013/001/R new last item>

AMC-ELA No 1 to 21.A.163(c) Privileges to issue authorised release certificates

21.A.163(c)

Block 12 on any issued EASA Form 1 is filled with the following statement:

'ELIGIBLE ONLY FOR INSTALLATION ON AIRCRAFT THAT ARE NOT CLASSIFIED AS COMPLEX MOTOR-POWERED AIRCRAFT, AND THAT ARE EITHER AEROPLANES WITHIN THE SCOPE OF CS-LSA, CS-VLA OR CS-23 LEVEL 1, OR SAILPLANES OR POWERED SAILPLANES WITHIN THE SCOPE OF CS-22, OR BALLOONS, HOT-AIR AIRSHIPS OR GAS AIRSHIPS THAT ARE ELA2 AIRCRAFT.'

AMC 21.A.163(d) Privileges - Maintenance

21.A.163(d)

The applicant may apply for terms of approval, which cover maintenance of a new aircraft that it has manufactured, as necessary to keep it in an airworthy condition, but not beyond the point at which the applicable operational rules require maintenance to be performed by an approved maintenance organisation. If the production organisation intends to maintain the aircraft beyond that point, it would have to apply for and obtain an appropriate maintenance approval.

When the competent authority is satisfied that the procedures required by 21.A.139 are satisfactory to control maintenance activities so as to ensure that the aircraft is airworthy, this capability will be stated in the terms of approval.

MAINTENANCE OF AIRCRAFT

Examples of such maintenance activities are:

- Preservation, periodic inspection visits, etc.
- Embodiment of a Service Bulletin.
- Application of airworthiness directives.
- Repairs.
- Maintenance tasks resulting from special flights.
- Maintenance tasks to maintain airworthiness during flight training, demo flights and other non-revenue flights.

Any maintenance activities must be recorded in the Aircraft Log Book. It must be signed by certifying staff for attesting the conformity of the work to the applicable airworthiness data. In some cases the Aircraft Log Book is not available, or 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). In these cases, production organisations must use EASA Form 53 which must subsequently become part of the aircraft maintenance records.

MAINTENANCE OF COMPONENTS OUTSIDE THE POA CAPABILITY

Such maintenance activity outside the capability of the Aircraft POA holder may still be accomplished under the production approval of the original release organisation. In such circumstances the engine(s), propeller(s), parts and appliances will require re-release in accordance with GM 21.A.163(c) (EASA Form 1). *<ei oo!>*

Records relevant to continued airworthiness or retirement lives, such as engine runs, flight hours, landings, etc., which affect part retirement of maintenance schedules must be specified on any re-release.

As an alternative the engine, propeller, part or appliance may be maintained by the holder of an approval in accordance with Part 145, classified and released as 'used'.

AMC 21.A.163(e) Procedure for the issue of a permit to fly including approval of the flight conditions

21.A.163(e)

1 INTENT

This acceptable means of compliance provides means to develop a procedure for the issue of a permit to fly including approval of the flight conditions.

Each POA applicant or holder must develop its own internal procedure following this AMC, in order to obtain the privilege of 21.A.163(e) to issue permits to fly for an aircraft under procedures agreed with its competent authority for production, when the production organisation itself is controlling under its POA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight.

2 PROCEDURE FOR THE ISSUE OF A PERMIT TO FLY

2.1 Content

The procedure must address the following points:

- as relevant, in accordance with 21.A.710(b), the approval of flight conditions;
- conformity with approved conditions;
- issue of the permit to fly under the POA privilege;
- authorised signatories;
- interface with the local authority for the flight.

2.2 Approval of the flight conditions (when relevant)

The procedure must include the process to establish and justify the flight conditions, in accordance with 21.A.708 and how compliance with 21.A.710(c) is established, and include the EASA Form 18B as defined in AMC 21.A.709(b) for the approval under the POA privilege.

2.3 Conformity with approved conditions

The procedure must indicate how conformity with approved conditions is made, documented and attested by an authorised person.

2.4 Issue of the permit to fly under the POA privilege

The procedure must describe the process to prepare the EASA Form 20b and how compliance with 21.A.711(c) and (e) is established before signature of the permit to fly.

2.5 Authorised signatories

The person(s) authorised to sign the permit to fly under the privilege of 21.A.163(e) must be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the Production Organisation Exposition.

2.6 Interface with the local authority for the flight

The procedure must include provisions describing the communication with the local authority for compliance with the local requirements which are outside the scope of the conditions of 21.A.708(b) (see 21.A.711(e)).

AMC-ELA No 1 to 21.A.165(a);(b) Obligations of the holder — Basic working document

21.A.165(a)
21.A.165(b)

The organisation should ensure that its personnel have access to, and are familiar with, the parts of the organisation's procedures that are applicable to their activities. This may be done, for example, by providing information to the personnel when updates of the documentation become available, or by making the changed documentation available at a location where the information is accessible to all the affected personnel.

Staff members of the production organisation who are involved in the production of products under the POA should be able to demonstrate their awareness of the information that is provided within the POE and the company manual. This can be achieved by any suitable means, and it does not necessarily require training sessions to be provided.

Regular internal monitoring should be used to internally verify that the relevant staff members are aware of the relevant definitions.

The organisation should systematically conduct monitoring for compliance with this documentation. This monitoring can be via auditing, structured experience exchanges, regular quality meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the development, or other similar means.

GM 21.A.165(a) Obligations of the holder - Basic working document

21.A.165(a)

Compliance with the production organisation exposition (POE) is a prerequisite for obtaining and retaining a production organisation approval.

The organisation should make the POE available to its personnel where necessary for the performance of their duties. A distribution list should therefore be established. Where the POE mainly refers to separate manuals or procedures, the distribution of the POE could be limited. The organisation should ensure that personnel have access to and are familiar with that part of the content of the POE or the referenced documents, which covers their activities.

Monitoring of compliance with the POE is normally the responsibility of the quality assurance function.

GM-ELA No 1 to 21.A.165(c) Obligations of the holder

21.A.165(c)

GM No 1 to 21.A.165(c) is applicable.
GM No 2 to 21.A.165(c) is applicable.
GM No 3 to 21.A.165(c) is applicable.
GM No 4 to 21.A.165(c) is applicable.

GM No. 1 to 21.A.165(c) Obligations of the holder - Conformity of prototype models and test specimens

21.A.165(c)

21.A.33 requires 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 a POA holder provides to a design approval holder/applicant.

GM No. 2 to 21.A.165(c) Obligations of holder - Conformity with type design

21.A.165(c)

Individual configurations are often based on the needs of the customer and improvements or changes which may be introduced by the type-certificate holder. There are also likely to be unintentional divergencies (concessions or non-conformances) during the manufacturing process. All these changes should have been approved by the design approval holder, or when necessary by the Agency.

GM No. 3 to 21.A.165(c) Obligations of the holder - Condition for safe operation

21.A.165(c)

Before issue of the Statement of Conformity to the competent authority of the Member State of registry, the holder of a production organisation approval should make an investigation so as to be satisfied in respect of each of the items listed below. The documented results of this investigation should be kept on file by the POA holder. Certain 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 modifications which 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, parts or appliances which:
   - are not new;
   - are furnished by the buyer or future operator (including those identified in 21.A.801 and 21.A.805).
3. Technical records which identify the location and serial numbers of components that have special traceability requirements for continued airworthiness purposes including those identified in 21.A.801 and 21.A.805.
4. Log book and a modification record book for the aircraft as required by the Agency.

5. Log books for products identified in 21.A.801 installed as part of the type design as required by the Agency.
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 furnishing or BFE (Items may be recorded in a technical log or other suitable arrangement such that the operator and Agency are formally aware).
8. Product support information required by other implementing rules and associated CS or GM, such as a Maintenance Manual, a Parts Catalogue, or MMEL all of which are to 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 the particular aircraft to the manufacturers recommended maintenance task list and the MRB document/report.
10. Details of the serviceability state of the aircraft in respect of a) the fuel and oil contents, b) provision of operationally required emergency equipment such as life rafts, etc.
11. Details of the approved interior configuration if different from that approved as part of the type design.
12. An approved Flight Manual which conforms to the build standard and modification state of the particular aircraft shall be available.
13. Show that inspections for foreign objects at all appropriate stages of manufacture have been satisfactorily performed.
14. The registration has been marked on the exterior of the aircraft as required by national legislation. Where required by national legislation fix a fireproof owners nameplate.
15. Where applicable there should be a certificate for noise and for the aircraft radio station.
16. The installed compass and or compass systems have been adjusted and compensated and a deviation card displayed in the aircraft.
17. Software criticality list.
18. A record of rigging and control surface movement measurements.
19. Details of installations which will be removed before starting commercial air transport operations (e.g., ferry kits for fuel, radio or navigation).
20. Where maintenance work has been performed under the privilege of 21.A.163(d) issue a release to service that includes a statement that the aircraft is in a condition for safe operation.
21. List of all applicable Service Bulletins and airworthiness directives that have been implemented.

AMC 21A.165(c)(3) Applicable emissions requirements

21.A.165(c)(3)

1. General

This determination is made according to the data provided by the engine type-certificate holder. This data should allow the determination of whether the engine complies with the emissions production cut-off requirement of paragraph (d) of Volume II, Part III, Chapter 2, paragraph 2.3.2 of Annex 16 to the Chicago Convention. It should be noted that in the case of engines for which the Competent Authority has granted an exemption from these requirements, the emissions requirements applicable are the regulatory levels defined in Volume II, Part III, Chapter 2, paragraph 2.3.2 c) of Annex 16 to the Chicago Convention.

2. Process and criteria for applying for exemptions against a NOx emissions production cut-of requirement.

2.1 Request

The organisation should submit a formal request to the Competent Authority, signed by an appropriate manager, and copied to all other relevant organisations and involved Competent Authorities including the Agency. The letter should include the following information for the Competent Authority to be in a position to review the application:

a) Administration
- Name, address and contact details of the organisation.

b) Scope of the request
- Engine type (model designation, type-certificate (TC) number, TC date, emission TC basis, ICAO Engine Emissions Databank Unique Identification (UID) Number);

- Number of individual engine exemptions requested;
- Duration (end date) of continued production of the affected engines.
- Designate whether the proposed exempted engines are 'spares' or 'new' and whom the engines will be originally delivered to.

Note: In the case where the engines are 'new' (new engines installed on new aircraft), and if this would result in a larger negative environmental impact as compared to exemptions only for spare engines, more detailed justification could be required to approve this application.

c) Justification for exemptions

When requesting an exemption for a 'new' engine, the organisation should, to the extent possible, address the following factors, with quantification, in order to support the merits of the exemption request:

- Technical issues, from an environmental and airworthiness perspective, which may have delayed compliance with the production cut-off requirement;
- Economic impacts on the manufacturer, operator(s) and aviation industry at large;
- Environmental effects. This should consider the amount of additional NOx emissions that will be emitted as a result of the exemption. This could include consideration of items such as:
  - the amount that the engine model exceeds the NOx emissions standard, taking into account any other engine models in the engine family covered by the same type-certificate and their relation to the standard;
  - the amount of NOx emissions that would be emitted by an alternative engine for the same application; and
  - the impact of changes to reduce NOx on other environmental factors, including community noise and CO2 emissions;
- Impact of unforeseen circumstances and hardship due to business circumstances beyond the manufacturer's control (e.g. employee strike, supplier disruption or calamitous events);
- Projected future production volumes and plans for producing a compliant version of the engine model seeking exemption;
- Equity issues in administering the production cut-off among economically competing parties (e.g. provide rationale for granting this exemption when another manufacturer has a compliant engine and does not need an exemption taking into account the implications for operator fleet composition, commonality and related issues in the absence of the engine for which exemptions are sought);
- Any other relevant factors.

2.2 Evaluation process.

2.2.1. Since the Agency has the overview of the exemptions granted within the Member States and within Third Countries by contacting the relevant Design Organisation, the Agency advises the Competent Authority during the process of granting exemptions. The advice from the Agency should take the form of a letter sent to the Competent Authority.

2.2.2 The evaluation of an exemption request should be based on the justification provided by the organisation and on the following definitions and criteria:

a) Use of engines

- 'Spare engines' are defined as complete new engine units which are to be installed on in-service aircraft for maintenance and replacement. It can be presumed that exemption applications associated with engines for this purpose would be granted as long as the emissions were equal to or lower than those engines they are replacing. The application should include the other items described in points (a) and (b) of paragraph 2.1 above, but it would not need to include the items specified in point (c). For spare engines, the evaluation of the exemption application would be conducted for record keeping and reporting purposes, but it would not be done for approval of an exemption.
- 'New engines' are defined as complete new engine units which are to be installed on new aircraft. They can only be exempted from a NOx production cut-off requirement if they already meet the previous standard (e.g. exemption from the CAEP/6 NOx production cut-off requirement of paragraph (d) of Volume II, Part III, Chapter 2, paragraph 2.3.2 of Annex 16 to the Chicago Convention is only possible if an engine type already meets the regulatory levels defined in Volume II, Part III, Chapter 2, paragraph 2.3.2 c) of Annex 16 to the Chicago Convention). Also, in order for

and exemption to be granted for this type of engine the applicant must clearly demonstrate that they meet the criteria for an exemption by including items described in points (a), (b) and (c) of paragraph 2.1 above. The Competent Authority may require additional information regarding the appropriateness of the potential exemption.

b) Number of new engine exemptions

Exemptions should be based on a total number of engines and time period for delivery of these engines, which would be agreed at the time the application is approved and based on the considerations explained in point (c) of paragraph 2.1 above. The number of engines exempted should not exceed 75 per engine type-certificate, and the end date of continued production of the affected engines should not exceed 31.12.2016. The number of exemptions is related to individual non-compliant engines covered under the same type-certificate.

Exemptions for new engines should be processed and approved by the Competent Authority, in agreement with the Agency, for both the manufacture of the exempted engines and the initial operator of the aircraft to which they are to be fitted. Given the international nature of aviation, the Agency should attempt to collaborate and consult on the details of exemptions. In the case where engine type certification is done through a reciprocity agreement between the Agency and Third Countries, the Agency should coordinate on the processing of exemptions and concur before approval is granted.

c) Other engines

Unlimited exemptions may be granted for continued production of spare engines having emissions equivalent to or lower than the engines they are replacing.

Engines for use on aircraft excluded from the scope of the Basic Regulation - i.e. aircraft specified in Annex II to the Basic Regulation and aircraft involved in activities referred to in Article 1(2) of the Basic Regulation (e.g. military, customs, police, search and rescue, fire fighting, coastguard or similar activities or services) - are excluded from civil aircraft NOx production cut-off requirements.

2.3 Rejection of request

If the competent authority rejects the request for exemption, the response should include a detailed justification.

<ED Decision 2013/001/R new AMC>

GM 21A.165(c)(3) Definitions of engine type certification date and production date

21.A.165(c)(3)

Volume II of Annex 16 to the Chicago Convention contains two different references to applicability dates:

- 'Date of manufacture for the first individual production model' which refers to the engine type certification date; and
- 'Date of manufacture for the individual engine' which refers to the production date of a specific engine serial number (date of Form 1).

The second reference is used in the application of engine NOx emissions production cut-off requirement which specifies a date after which all in-production engine models must meet a certain NOx emissions standard.

21A.165(c)(3) includes the production requirements and refers to paragraphs (b) and (d) of Volume II, Part III, Chapter 2, paragraph 2.3 of Annex 16 to the Chicago Convention.

<ED Decision 2013/001/R new GM>

GM No. 4 to 21A.165(c) Airworthiness Release or Conformity Certificate

21.A.165(c)

The EASA Form 1, when used as a release certificate as addressed in 21.A.165(c)(2) and (3), may be issued in two ways:

- As an airworthiness release, only when by virtue of the arrangement described in 21.A.133(b) and (c), it can be determined that the part conforms to the approved design data and is in a condition for safe operation.
- As a conformity certificate, only when by virtue of the arrangement described in 21.A.133(b) and (c), it can be determined that the part conforms to applicable design data which is not (yet) approved, for a reason that is indicated in Block 12. Parts released with an EASA Form 1 as a conformity certificate are not eligible for installation in a type-certificated aircraft.

The EASA Form 1 should only be used for conformity release purposes when it is possible to indicate the reason that prevents its issue as for airworthiness release purposes.

GM 21.A.165(d) and (h) Obligations of the holder - Recording and archiving system

21.A.165(d)
21.A.165(h)

Records within a production environment satisfy two purposes. Firstly, they are required, during the production process to ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the approved production organisation should implement a system for the compilation and retention of records during all stages of manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.

The management of such information should be subject to appropriate procedures in the Quality System required by 21.A.139.

All forms of recording media are acceptable (paper, film, magnetic, ...) provided they can meet the required duration for archiving under the conditions provided.

The related organisation procedures should:

- Identify records to be kept.
- Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information (e.g., by product, subject).
- Control access and provide effective protection from deterioration or accidental damage.
- Ensure continued readability of the records.
- Demonstrate to the competent authority proper functioning of the records system.
- Clearly identify the persons involved in conformity determination.
- Define an archiving period for each type of data taking into account importance in relation to conformity determination subject to the following:
  - a Data which supports conformity of a product, part, or appliance should be kept for not less than three years from the issue date of the related Statement of Conformity or Authorised Release Certificate.
  - b Data considered essential for continuing airworthiness should be kept throughout the operational life of the product, part or appliance.
- Ensure that the recording and record-keeping system used by the partners, supplier and sub-contractors meet the objective of conformity of the product, part or appliance with the same level of confidence as for their own manufacture. They should define in each case who is to retain the record data (organisation or partner, supplier or sub-contractor). They should also define method for surveillance of the recording/record keeping system of the partners, suppliers or sub-contractors.

AMC-ELA No 1 to 21.A.165(d) Obligations of the holder — Recording and archiving system

21.A.165(d)

The POA holder should establish (in coordination with the design holder) which details are to be recorded to support the production process and to assist the design holder in dealing with continued airworthiness matters. The level of detail chosen for the production process records can have a substantial impact on the scope of any corrective actions.

AMC-ELA No 1 to 21.A.165(e);(f) Obligations of the holder — Reporting to the design holder

21.A.165(e)
21.A.165(f)

The production organisation should record and evaluate any occurrences that may affect the safety of the product. Occurrence reports are collected and assessed in order to identify adverse trends, or to address deficiencies, and to extract reportable occurrences.

The production organisation should share all of its information that is related to potential product deficiencies, observed in the field or during or after production and delivery, with the design approval holder. The production and the design organisations should jointly determine any product design and / or corrective actions that may be required in the field.

The production organisation should have procedures in their quality system to determine whether a production-related deficiency results in an 'unsafe condition' in accordance with point 21.A.3B. This may be done by applying the method described in ASTM F2295, as follows:

- any occurrence that is categorised as an 'urgent safety of flight situation' in ASTM F2295 is considered to be an 'unsafe situation'; and
- any occurrence that falls into the category of a 'potential safety of flight bulletin' in ASTM F2295 is considered to have the potential to be an 'unsafe situation'. Further analysis is required, and possibly in coordination with the competent authority or with EASA.

Production deficiencies, in which the assessment leads to a potential 'unsafe situation', should be reported to the competent authority, within the terms and in the manner determined by the competent authority.

If the design and production entities both work within one consolidated team, then it is sufficient for either the design or the production entity to establish and maintain an internal occurrence reporting system that is accessible to both entities.

AMC-ELA No 1 to 21.A.165(g) Obligations of the holder — Continuing airworthiness assistance

21.A.165(g)

The production organisation should actively communicate with and assist the holder of the type certificate or the design approval when dealing with any continuing airworthiness actions that are related to the products, parts or appliances that have been produced. Compliance with this requirement can be shown by effective coordination regarding the corrective actions.

If the design and production entities both work within one consolidated team, assistance to the type design holder is expected to be provided as an intrinsic function of the cooperation, and no further evidence of the assistance needs to be provided.

AMC-ELA No 1 to 21.A.165(d);(h) Obligations of the holder — Recording and archiving system

21.A.165(d)

21.A.165(h)

Records of production that have been used to determine conformity with the type design, such as those records mentioned in relation to point 21.A.165(c) and (d), should be archived and preserved using an adequate archiving method that should be defined within the company manual. Those records need to be held at the disposal of the competent authority, and need to be retained in order to provide the information necessary to ensure the continuing airworthiness of the products, parts or appliances.

All forms of recording media are acceptable (paper, database, etc.), provided that the preservation of the records for the retention period for archiving can be ensured.

The production organisation should:

- define the records to be retained. If the type design defines which data needs to be recorded, the production organisation is not required to go beyond this data;
- implement a structured method of archiving. If IT-based ERP systems with workflow management are used, a detailed description of the system is not required;
- ensure that there is effective protection of the records from deterioration or accidental damage, e.g. by holding hard and soft copies in separate locations;
- ensure the continued readability of the records by selecting an adequate method of archiving;
- define a retention period for each type of data, taking into account that the determination of conformity is subject to the following:
    - data which supports the conformity of a product, part or appliance should be kept for not less than 3 years from the issue date of the related statement of conformity or authorised release certificate;
    - data considered to be essential for continuing airworthiness should be kept throughout the operational life of the product, part or appliance.

If the production organisation has decided that the records of any partner, supplier or subcontractor do not need to be supplied to the production organisation, then the production organisation should extend its requirements for record keeping to that partner, supplier or subcontractor.

Subpart J - Design organisation approval

AMC-ELA No 1 to 21.A.231 Scope

21.A.231

The AMC-ELA in this Subpart provides acceptable means of compliance for a design organisation approval for organisations that design:

- aeroplanes that are within the scope of CS-LSA, CS-VLA and CS-23 level 1;
- sailplanes or powered sailplanes that are within the scope of CS-22; or
- balloons, hot-air airships and gas airships that are ELA2 aircraft,

that are not classified as complex motor-powered aircraft, as well as products or articles that are used on these types of aircraft.

GM-ELA No 1 to 21.A.231 Scope

21.A.231

The AMC indicated with 'AMC-ELA' and the GM related to them (as indicated with 'GM-ELA') provide an alternative set of AMC and GM to the other available AMC and GM.

The AMC-ELA provide acceptable means to meet the requirements of Subpart J for small, non-complex organisations that make designs for aircraft as specified in AMC-ELA No 1 to 21.A.231.

If the AMC-ELA are not applicable (for instance, for small, non-complex organisations that make designs for other low-risk products outside the scope of AMC-ELA No 1 to 21.A.231, e.g. light rotorcraft, CS-23 Level 2, etc.), the applicant is not obliged to use any other available AMC. Switching to those other available AMC will not necessarily provide a means of compliance that is proportionate. Since AMC are a means, but not the only means of showing compliance, applicants and approval holders can also propose alternative means of compliance. These alternative means may use the AMC ELA as a baseline, and complement them with additional or more stringent controls, processes or methods. This allows a gradual increase in the level of detail of the established procedures and the thoroughness of the implemented tools for DOA approval. This enables the introduction of a proportionate approach that is commensurate with the kind of product and its associated risk as a function of the complexity of the organisation and the risk and performance of the product. The use of AMC-ELA as a baseline for DOA outside the applicability of that AMC-ELA is therefore considered to be an appropriate starting point.

Complementing elements need to be detailed, documented and recorded to a level where the occurrence of any repetitive non-conformities is mitigated. Applicants and approval holders need to demonstrate to the competent authority in such cases that those additional means meet the requirements that are appropriate for the complexity of these designs.

GM-ELA No 2 to 21.A.231 Scope — AMC-ELA as a complete, self-contained set of AMC

21.A.231

The AMC-ELA provide an alternative, complete and self-contained set of AMC. Small, non-complex organisations that design products or articles within the scope of AMC-ELA can use AMC-ELA instead of the existing AMC to Subpart J.

The AMC-ELA in full determine the acceptable means of compliance with Subpart J. The applicant should implement each of the means defined here on an individual basis. If the specific characteristics of the organisation render individual elements of the AMC-ELA impracticable or not applicable, alternative means with specific resolutions should be agreed with the competent authority. A justification needs to be developed that shows that the means applied meet the requirements of Part-21. A trustful relationship between the typically very compact team of the applicant and the competent authority should be developed.

The applicant is strongly encouraged to ask the relevant contact person at the competent authority for mutual clarification of any questionable item, if there is any doubt.

GM-ELA No 3 to 21.A.231 Scope — Explanation of terms used in AMC-ELA

21.A.231

'A method needs to be practised'

When the AMC-ELA uses the term 'a method needs to be practised', it means that the applicant can show what is actually done in order to comply with a requirement in a practical and systematic way. The applicant is not expected to have an excessively detailed documented procedure. As a baseline, documented procedures for such 'practised methods' can be limited to a 'declaration' of the principles that are considered within the practised method that refers to the system used. For example, a declaration such as 'Document control is ensured by workflow management as part of the IT-based Document Management System (DMS)' may be provided. This is acceptable when evidence is provided by work results, by demonstration of actual behaviour during surveillance activities, or by similar means. When the actual behaviour continuously shows that it does not satisfy the needs of the requirements, a more detailed documented procedure may need to be implemented to rectify the situation.

Delegation of tasks and responsibilities

AMC-ELA differentiates between the delegation of tasks, and the delegation of responsibilities. For small and simple organisations, the delegation of responsibilities to specific and separate organisational positions can create overly burdensome administrative processes that do not reflect the operational reality. The AMC-ELA accepts that tasks can be delegated, while the responsibility formally stays with the delegator. This can increase efficiency, and it offers the possibility to simplify procedures. A typical example is when the head of the design organisation (HDO) delegates tasks, while keeping the responsibility associated with this task.

If this situation is identified with respect to the individual requirements, this may significantly reduce the effort required for documentation, and it allows streamlined methods to be practised.

AMC-ELA No 1 to 21.A.234 Application

21.A.234

EASA Form 80 should be obtained from the EASA website and completed by the head of the design organisation (HDO). The completed form should be submitted to EASA, accompanied by a copy of the company's registration.

AMC-ELA No 1 to 21.A.239(a) Design assurance system — Definition

21.A.239(a)

The term 'design assurance system (DAS)', in the context of the AMC-ELA to Subpart J, refers to those elements of product development and certification that ensure the control and supervision of the initial design, of changes or repairs to the design, and its continued airworthiness with respect to the applicable type-certification basis, the operational suitability data certification basis and the environmental protection requirements. Therefore, elements to be considered as part of the DAS are:

- the generation, iteration, EASA acceptance and maintenance of the certification programme;
- the demonstration of compliance and its verification within the design organisation;
- the declaration of compliance provided by the design organisation to EASA;
- monitoring functions to ensure the continued airworthiness of the certified product, including the resulting activities;
- independent system monitoring of the compliance with, and the adequacy of, the documented procedures of this system.

A typical development process will include a number of additional activities, such as preliminary design, project management elements (a PDR, CDR, etc.), or development activities (test platforms, demonstrators, feasibility studies), etc., that are not part of the DAS, even when elements of the DAS form specific milestones in the development path. In the context of this Subpart, those other activities are consequently excluded from the assessment of the DAS, even when elements of the DAS are also applied to those activities.

AMC-ELA No 2 to 21.A.239(a) Design assurance system — Ensuring compliance

21.A.239(a)

An acceptable design assurance system (DAS) contains the elements of the DAS that are described in AMC- ELA No 1 to 21.A.239(a), and which are further broken down below into the following activities:

- The generation, iteration, EASA acceptance and maintenance of the certification programme:
  - ensure that adequate product, change or repair specifications have been generated and are available to support a meaningful certification programme;
  - generate a certification programme that is tailored to the product, or change, or repair specified, and that identifies:

  - the product and the kinds of operations envisaged, or the changes to them;
  - the proposed certification basis;
  - a description of how compliance will be demonstrated, with the proposed means of compliance and any selected guidance material, if this is not clearly visible from the compliance/means of compliance (MOC) checklist;
  - a compliance checklist, together with the means of compliance that is intended to be used, and any guidance material;
  - the relevant CVE to be used on the project;
  - the programme milestones for interaction with EASA;
- iteration of the certification programme, until EASA acceptance is reached;
- monitoring of the workflow in line with the certification programme:
  - updating the certification programme and seeking a new acceptance by EASA, if necessary;
  - ensuring that the relevant staff members adhere to the certification programme when they conduct certification activities;
- structured methods for the classification of changes, repairs or deviations by using an adequate process flow, or by following adequate decision forms (matrices) if there are major changes that directly support the change-related certification programme.

- Demonstration of compliance and its verification within the design organisation:
  - ensure that a complete set of data has been developed in order to form a complete and concise definition of the type design;
  - ensure that the selected method for defining the type design allows for adequate configuration management, for the purposes of design and design variant management, and for the later management of production;
  - ensure that the handling of changes within the type investigation process and post-TC/-STC is controlled, coordinated and repeatable;
  - ensure that analyses and tests have been conducted by using methods that are adequate to support the means of compliance that was defined, and that they are documented to allow their use for showing compliance;
  - ensure that the formal demonstration of compliance for the intended type design, change design or repair design, including the generation of compliance statements with respect to any relevant certification requirement, is provided;
  - conduct the formal verification of compliance for the intended type design, change design or repair design, including the verification of compliance statements with respect to any relevant certification requirement by an independent person nominated within the design organisation (i.e. a compliance verification engineer (CVE));
  - ensure that the applicable product-relevant documentation, such as the AFM, ICA or MMEL, is established and provided;

    Note: For more information, see GM No 1 to 21.A.15(d), clarification of the term 'as applicable'.
  - ensure that prototypes or test specimens, produced by a connected production organisation, or by any prototyping facilities of the design organisation itself, are used on the basis of an adequate configuration verification against the design definitions specified for the relevant test;
  - ensure that coordinated flight test activities with adequate risk mitigations are performed.
- Monitoring functions to ensure the continued airworthiness of the certified product:
  - conduct monitoring of any significant events;
  - ensure that all reported occurrences and events are investigated and classified;
  - ensure that there is occurrence reporting for events that are classified as 'safety-critical' and that constitute unsafe or potentially unsafe conditions;
  - ensure that information and instructions are generated and published, as applicable, and that information or instructions and any related design activity are verified by following the same principles as for any type design, change design or repair design activity/documentation.
- Declaration of compliance by the design organisation to EASA:
  - verification of the completeness of the compliance verification and type design documentation as defined within the certification programme by the head of airworthiness (HoA);

- issuing of the declaration of compliance by the head of the design organisation (HDO) to EASA, subsequent to the satisfactory completion of the verification of compliance against all the applicable certification requirements.

AMC-ELA No 3 to 21.A.239(a) Design assurance system — Discharge of responsibilities

21.A.239(a)

As part of the design assurance system (DAS), at least the following responsibilities have to be allocated:

- Head of the design organisation (HDO):
  - control of budget and staffing to ensure the completion of the development and certification tasks of the design organisation approval (DOA) within reasonable time frames and workload. The HDO is ultimately responsible for providing the necessary resources for the proper functioning of the design organisation;
  - issuing the declaration of compliance (see points 21.A.20(d) and 21.A.97(a)(3)) with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements after verifying the satisfactory completion of the type investigation;
  - ensuring that adequate and timely information is provided to EASA in matters that affect the DOA.
- Compliance verification engineer (CVE):
  - conducting the verification that compliance has been demonstrated with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements and its technical content within its subject matter of nomination. Verification of a compliance demonstration implicitly includes the approval of all the referenced and supporting documents. The applicant may elect to separately document the approval of the individual supporting documents, e.g. by having a cover sheet with the supporting documents in the attachment.
- Head of airworthiness (HoA):
  - ensuring the verification of compliance with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements by adequately qualified staff and that the activities that are necessary to demonstrate compliance are complete;
  - ensuring that a design organisation handbook (DOH) is prepared and updated as required;
  - ensuring that there is adequate and timely interaction with the authorities and internally on all relevant matters with respect to type certification, changes to type certificates, the approval of repairs and the approval of the design organisation. This includes the coordination that the required documentation (type design documents, compliance documentation and service documents including manuals/ICA and the MMEL, if applicable) is adequately established;
  - ensuring that the continued airworthiness activities are properly performed;
  - accepting the certification programme and the approval of the classification of changes/repairs, minor changes/repairs, major repairs, and flight conditions and the issue of PtFs under the relevant privileges;
  - providing verification to the HDO that all the activities required for the type investigation have been properly completed.
- Independent system monitoring (ISM):
  - monitoring that the implemented DAS is adequate, and that it is complied with, by using structured experience exchanges, regular quality meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the development, planned and unplanned audits, or other similar means;
  - conducting independent ISM activities and directly reporting any observations to the HDO.

AMC-ELA No 4 to 21.A.239(a) Design assurance system — Independent system monitoring

21.A.239(a)

Monitoring that the implemented design assurance system (DAS) is adequate, and that it is complied with, is done by systematic means. The systematic means of monitoring may include structured experience exchanges, regular design meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the development, or by other similar means.

Audits may be one element of monitoring. When implemented, audits should be conducted as combined process/product (project) audits that focus on the implemented key processes or methods practised according to the DOH (or the equivalent document), and the audits should also allow the design organisation to find ways to become more efficient by continuous improvement.

Systematic means of monitoring are coordinated by the ISM, under the responsibility of the HDO, and with a direct reporting line to the HDO. If the ISM is not independent of the activity that is monitored, especially if the HDO also fulfills the role of the head of ISM, the HDO may involve auditors that have adequate knowledge of the applicable requirements and of the implemented DAS. The system monitoring function may be undertaken by the existing quality assurance organisation, provided that it has adequate reporting lines to the HDO.

GM No. 1 to 21.A.239(a) Design assurance system

21.A.239(a)

1. Purpose

This GM outlines some basic principles and objectives of 21.A.239(a).

2. Definitions

2.1 The design assurance system is the organisational structure, responsibilities, procedures and resources to ensure the proper functioning of the design organisation.

2.2 The design assurance means all those 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 CS and environmental protection requirements,
- to demonstrate and verify the compliance with these CS and environmental protection requirements, and
- to demonstrate to the Agency this compliance.

2.3 The 'Type Investigation' means the tasks of the organisation in support of the type-certificate, supplemental type-certificate or other design approval processes necessary to demonstrate and verify and to maintain compliance with the applicable CS and environmental protection requirements.

3. Design Assurance

The complete process, starting with the CS and environmental protection requirements and product specifications and culminating with the issuing of a type-certificate, is shown in the diagram on Figure 1. This identifies the relationship between the design, the Type Investigation and design assurance processes.

Effective design assurance demands a continuing evaluation of factors that affect the adequacy of the design for intended applications, in particular that the product, or part, complies with applicable CS and environmental protection requirements and will continue to comply after any change.

Two main aspects should therefore be considered:

- How the planned and systematic actions are defined and implemented, from the very beginning of design activities up to continued airworthiness activities;
- How these actions are regularly evaluated and corrective actions implemented as necessary.

3.1 Planned and Systematic Actions

For design organisations carrying out Type Investigation of products, the planned and systematic actions should cover the following tasks and procedures should be defined accordingly:

3.1.1 General

a. To issue or, where applicable, supplement or amend the handbook in accordance with 21.A.243, in particular to indicate the initiation of design activities on a product.

b. To assure that all instructions of the Handbook are adhered to.

c. To conduct Type Investigation.

d. To nominate staff as 'compliance verification engineers' responsible to approve compliance documents as defined in paragraph 3.1.3.

e. To nominate personnel belonging to the Office of Airworthiness responsible as defined in paragraph 3.1.4.

f. In the case of an applicant for a supplemental type-certificate, to obtain the agreement of the type-certificate holder for the proposed supplemental type-certificate to the extent defined in 21.A.115.

g. To ensure full and complete liaison between the type design organisation and related organisations having responsibility for products manufactured to the type-certificate.

h. To provide the assurance to the Agency that prototype models and test specimens adequately conform to the type design (see 21.A.33(b)(1)).

3.1.2 Chief Executive and Head of design organisation (or his or her Deputy)

a. The Chief Executive should provide the necessary resources for the proper functioning of the design organisation.

b. The Head of the design organisation, or an authorised representative, should sign a declaration of compliance (see 21.A.20(d) and 21.A.97(a)(3)) with the applicable CS and environmental protection requirements after verification of satisfactory completion of the Type Investigation. In accordance with 21.A.20(e) and 21.A.97(a)(4), his or her signature on the declaration of compliance confirms that the procedures as specified in the handbook have been followed (see also GM 21.A.A265(b)).

c. The functions of Chief Executive and Head of the design organisation may be performed by the same person.

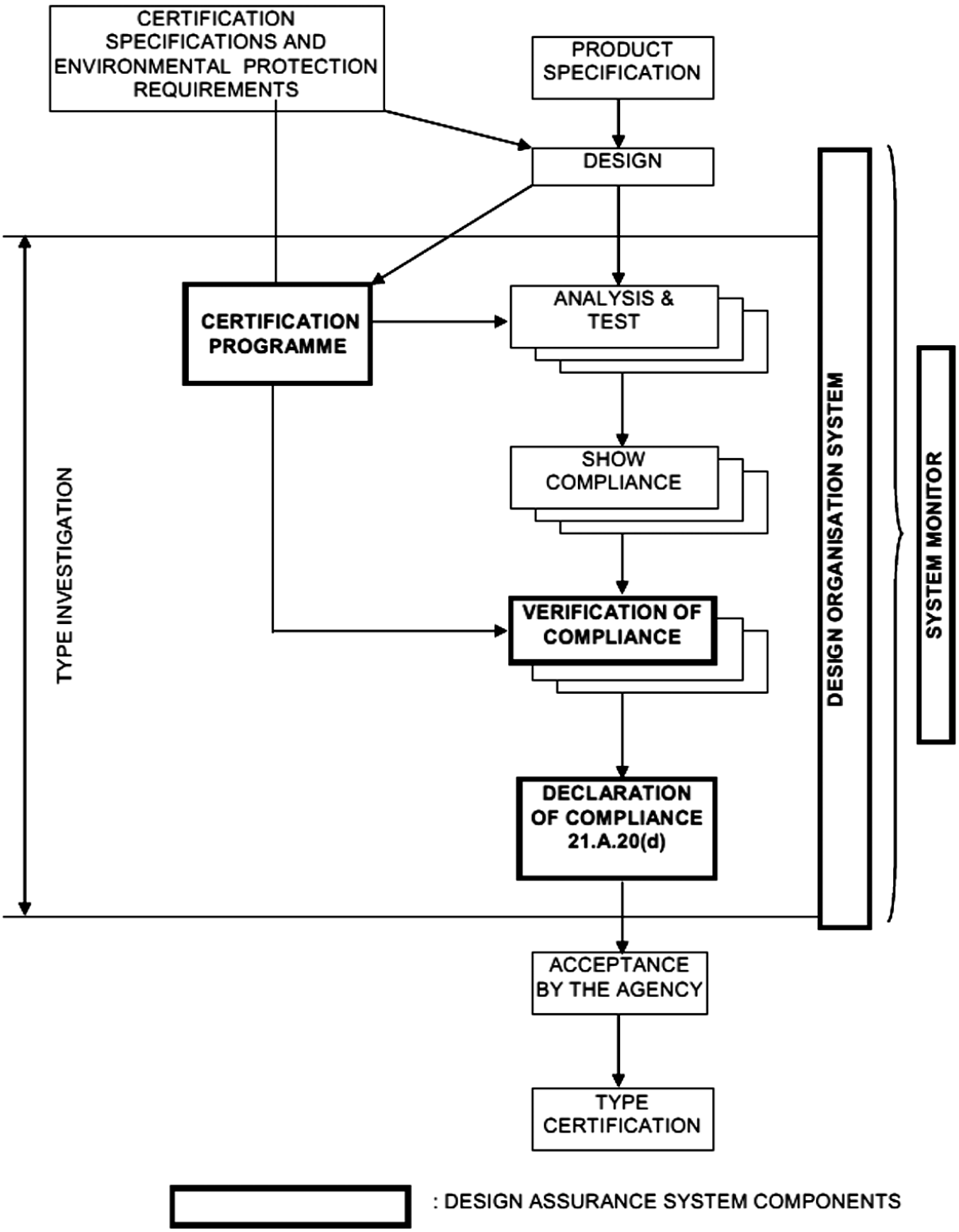


Figure 1 - RELATIONSHIPS BETWEEN DESIGN, DESIGN ASSURANCE AND TYPE INVESTIGATION

3.1.3 Compliance Verification

a. Approval by signing of all compliance documents, including test programmes and data, necessary for the verification of compliance with the applicable CS and environmental protection requirements as defined in the certification programme.

b. Approval of the technical content (completeness, technical accuracy...), including any subsequent revisions, of the manuals approved by the Agency (Aircraft Flight Manual, the Airworthiness Limitations section of the Instructions for Continued Airworthiness and the Certification Maintenance Requirements (CMR) document, where applicable).

3.1.4 Office of Airworthiness

a. Liaison between the design organisation and the Agency with respect to all aspects of the certification programme.

b. Ensuring that a handbook is prepared and updated as required in 21.A.243.

c. Co-operation with the Agency in developing procedures to be used for the type certification process.

d. Issuing of guidelines for documenting compliance.

e. Co-operation in issuing guidelines for the preparation of the manuals required by the applicable implementing rules, Service Bulletins, drawings, specifications, and standards.

f. Ensuring procurement and distribution of applicable CS and environmental protection requirements and other specifications.

g. Co-operating with the Agency in proposing the type-certification basis

h. Interpretation of CS and environmental protection requirements and requesting decisions of the Agency in case of doubt.

i. Advising of all departments of the design organisation in all questions regarding airworthiness, operational suitability, environmental protection approvals and certification.

j. Preparation of the certification programme and co-ordination of all tasks related to Type Investigation in concurrence with the Agency.

k. Regular reporting to the Agency about Type Investigation progress and announcement of scheduled tests in due time.

l. Ensuring co-operation in preparing inspection and test programmes needed for demonstration of compliance.

m. Establishing the compliance checklist and updating for changes.

n. Checking that all compliance documents are prepared as necessary to demonstrate compliance with all CS and environmental protection requirements, as well as for completeness, and signing for release of the documents.

o. Checking the required type design definition documents described in 21.A.31 and ensuring that they are provided to the Agency for approval when required.

p. Preparation, if necessary, of a draft for a type-certificate data sheet and/or type-certificate data sheet modification.

q. Providing verification to the head of the design organisation that all activities required for Type Investigation have been properly completed.

r. Approving the classification of changes in accordance with 21.A.91 and granting the approval for minor changes in accordance with 21.A.95(b).

s. Monitoring of significant events on other aeronautical products as far as relevant to determine their effect on airworthiness or operational suitability of products being designed by the design organisation.

t. Ensuring co-operation in preparing Service Bulletins and the Structural Repair Manual, and subsequent revisions, with special attention being given to the manner in which the contents affect airworthiness and environmental protection and granting the approval on behalf of the Agency.

u. Ensuring the initiation of activities as a response to a failure (accident/incident/in-service occurrence) evaluation and complaints from the operation and providing of information to the Agency in case of airworthiness or operational suitability impairment (continuing airworthiness and continued operational suitability).

v. Advising the Agency with regard to the issue of airworthiness directives in general based on Service Bulletins.

w. Ensuring that the manuals approved by the Agency, including any subsequent revisions (the Aircraft Flight Manual, MMEL, the Airworthiness Limitations section of the Instructions for Continued Airworthiness and the Certification Maintenance Requirements (CMR) document, where appli-

cable) are checked to determine that they meet the respective requirements, and that they are provided to the Agency for approval.

3.1.5 Maintenance and Operating Instructions

a. Ensuring the preparation and updating of all maintenance and operating instructions (including Services Bulletins) needed to maintain airworthiness (continuing airworthiness) in accordance with relevant CS. For that purpose, the applicant should:
- establish the list of all documents it is producing to comply with the Appendix referred to in CS 23.1529, CS 25.1529, CS 27.1529, CS 29.1529, CS-E 25 or CS-P 40 (NPA P-3);
- define procedures and organisation to produce and issue these documents, using where applicable and so elected 21.A.263(c)(3) privilege.

b. In accordance with 21.A.57, 21.A.61, 21.A.107, 21.A.119, 21.A.120A and 21.A.449, ensuring that these documents are provided to all affected operators and all involved authorities.

3.1.6 Operational Suitability Data

a. Ensuring the preparation and updating of all operational suitability data in accordance with relevant CS. For that purpose, the applicant should:
- establish the list of all documents it is producing to comply with CS-MMEL or CS-GEN-MMEL, CS-FCD, CS- CCD, CS-SIMD and CS-MCSD as applicable;
- define procedures and organisation to produce and issue these documents, using where applicable and so elected 21.A.263(c)(3) privilege.

b. In accordance with 21.A.57, 21.A.62, 21.A.108, 21.A.119 and 21.A.120B, ensuring that these documents are provided to all affected operators and training organisations and all involved authorities.

3.2 Continued effectiveness of the design assurance system. The organisation should establish the means by which the continuing evaluation (system monitoring) of the design assurance system will be performed in order to ensure that it remains effective.

<ED Decision 2014/007/R small changes 'operationa suitability' and 3.1.6 added>

GM No. 2 to 21.A.239(a) Design assurance system for minor changes to type design or minor repairs to products

21.A.239(a)

1. Purpose

This GM outlines some basic principles and objectives in order to comply with 21.A.239(a) for organisations designing only minor changes to type design or minor repairs to products.

2. Design assurance system

The design assurance system should include the following:

- an organisational structure to:
  - control the design
  - demonstrate compliance with applicable CS and environmental protection requirements
  - independently check demonstrations of compliance
  - liaise with the Agency
  - continuously evaluate the design organisation
  - control sub-contractors
- procedures and responsibilities associated with the functions listed above, taking due account of Part 21 requirements applicable to design and approval of minor changes to type design or minor repairs to products.

AMC 21.A.239(a)(3) Design assurance system - Independent system monitoring

21.A.239(a)(3)

The system monitoring function required by 21.A.239(a)(3) may be undertaken by the existing quality assurance organisation when the design organisation is part of a larger organisation.

AMC 21.A.239(b) Design assurance system - Independent checking function of the demonstration of compliance

21.A.239(b)

1. The independent checking function of the demonstration of compliance should consist of the verification by a person not creating the compliance data. Such person may work in conjunction with the individuals who prepare compliance data.
2. The verification should be shown by signing compliance documents, including test programmes and data.
3. For a product, there is normally only one compliance verification engineer nominated for each relevant subject. A procedure should cover the non-availability of nominated persons and their replacement when necessary.
4. For STC cases, when compliance statement and associated documentation are produced by the TC holder, and when these data are approved under the system of the authority of TC holder, then the STC applicant does not need to provide, within its own DOA, the independent checking function required in 21.A.239(b) for these data.

AMC-ELA No 1 to 21.A.239(b) Design assurance system — Independent checking function

21.A.239(b)

The design assurance system (DAS) defines methods to ensure there is an independent verification of the compliance demonstration on the basis of which the organisation submits compliance statements and associated documentation to EASA.

Compliance verification therefore means the approval of all those compliance documents that are necessary for the verification of compliance with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements, as defined in the certification programme. This shall include all the relevant aspects that ultimately lead to the showing of compliance, and therefore, for example, it may need to be extended to test programmes or data analysis reports if the higher-level compliance report itself does not adequately cover all the necessary levels of detail.

Compliance verification is provided by the approval of documented information by a person who did not create the approved data, and who acts as a compliance verification engineer (CVE). Approval is given after the completeness and technical accuracy of the report and the correctness of the derived statement of compliance have been verified. The approval must be documented in such a way that the date and the person who gives approval can be identified.

CVEs are nominated for specific scopes of responsibility. The structure of these scopes is defined by the applicant, and it should follow a logical structure, commensurate with the type of product, such as, for example, by disciplines (e.g. structures, flight, electrical system, etc.), by a set of CS requirements (Subpart B, Subpart C, etc.), by a (set of) ATA chapters (ATA 27 Flight Controls, ATA 32 Landing Gear, ATA 51 Structures, etc.), or by any other appropriate logic. For the kind of product addressed by this AMC, it is explicitly acceptable for the scope of the CVE to be broken down into only a few different disciplines, commensurate with the kind of product.

Compliance verification as part of the DAS is the only task within the DOA in which the creation and the CVE check of documents is mandatorily performed by different persons. It is acceptable for one person to hold multiple CVE nominations. For small companies, it is acceptable for persons who hold other functions, such as the CE, HDO and HOA, to also be nominated as design engineers and CVEs, provided they have the proper competence.

AMC-ELA No 1 to 21.A.239(c) Design assurance system — Acceptability of tasks performed by external parties

21.A.239(c)

The organisation is responsible for ensuring that the type design of the product complies with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements. This includes the determination that components designed by, or tasks performed by, external parties are acceptable. To discharge this responsibility, the DO has to implement documented methods that ensure the compliance of the final product, and that make use of these components or task results, prior to making the final declaration of compliance.

One acceptable means to ensure this is whether the CVE(s) of the applicant conducts (conduct) the verification of compliance, in line with the definitions of the DAS of the applicant. As the verification of compliance remains with

the applicant, no specific qualification measures are required other than to pragmatically verify the capabilities of the external party, and to ensure that the required level of detail is supplied to enable the work results to be adequately verified. The capability of an external party should be verified if more complex activities are subcontracted.

If a DOA subcontracts the CVE function to an external party that conducts the task, but does not hold its own DOA, then the same requirements for the qualification, nomination and documentation of qualification and nomination apply to the person who is nominated as a CVE as are defined in the design organisation handbook (DOH) of the contracting DOA. The availability of all the relevant information for the subcontracted CVE to perform their duties is ensured by the applicant. The relevant contract defines that when acting as a CVE, the external person acts on behalf of, and with direct reporting to, the applicant's head of airworthiness (HoA). The person who acts as a CVE is named in this contract, or in an attachment to it.

Alternatively, if an organisation with a DOA obtains design substantiation data from a subcontractor that also holds a DOA, and the work that is conducted is within the approved scope of this subcontractor DOA, the subcontractor's design data becomes acceptable when the contracting DOA has verified that the results adequately meet the needs of the product under development. Additional formal compliance verification by the contracting DOA is not required if the CVE of the contracted DOA signs and approves the document under its DOA.

GM 21.A.239(c) Design assurance system

21.A.239(c)

In meeting the requirements of 21.A.239(c) the applicant for a design organisation approval under Subpart J may adopt the following policy:

1 The satisfactory integration of the Partner/Sub-contractor and applicant's design assurance systems should be demonstrated for the activities covered under the applicant's terms of approval.

2 In the event that a Partner/Sub-contractor holds a design organisation approval (DOA), then in accordance with 21.A.239(c), the applicant may take this into account in demonstrating the effectiveness of this integrated system.

3 When any Partner/Sub-contractor does not hold a DOA then the applicant will need to establish to its own satisfaction and the satisfaction of the Agency, the adequacy of that partner's/sub-contractor's design assurance system in accordance with 21.A.243(b).

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

21.A.243(a)

The handbook should provide the following information for each product covered by the design organisation approval.

1. A description of the tasks which can be performed under the approval, according to the following classification:
   a. General areas, like subsonic turbojet aeroplanes, turbopropeller aeroplanes, small aeroplanes, rotorcraft.
   b. Technologies handled by the organisation (composite, wood or metallic construction, electronic systems, etc.)
   c. A list of types and models for which the design approval has been granted and for which privileges may be exercised, supported by a brief description for each product.
   d. For repair design, classification and (if appropriate) approval activities it is necessary to specify the scope of activity in terms of structures, systems, engines, etc.
2. A general description of the organisation, its main departments, their functions and the names of those in charge; a description of the line management and of functional relationships between the various departments.
3. A description of assigned responsibilities and delegated authority of all parts of the organisation which, taken together, constitute the organisation's design assurance system together with a chart indicating the functional and hierarchical relationship of the design assurance system to Management and to other parts of the organisation; also the chains of responsibilities within the design assurance system, and the control of the work of all partners and sub-contractors.
4. A general description of the way in which the organisation performs all the design functions in relation to airworthiness, operational suitability and environmental protection approvals including:

a. The procedures followed and forms used in the Type Investigation process to ensure that the design of, or the change to the design of, the product as applicable is identified and documented, and complies with the applicable CS and environmental protection requirements, including specific requirements for import by importing authorities
b. The procedures for classifying design changes as 'major' or 'minor' and for the approval of minor changes.
c. The procedures for classifying and approving unintentional deviations from the approved design data occurring in production (concessions or non-conformance's).
d. The procedure for classifying and obtaining approval for repairs.

5 A general description of the way in which the organisation performs its functions in relation to the continuing airworthiness and continued operational suitability of the product it designs, including co-operation with the production organisation when dealing with any continuing airworthiness actions that are related to production of the product, part or appliance, as applicable.

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

7. An outline of a system for controlling and informing the Staff of the organisation of current changes in engineering drawings, specifications and design assurance procedures.

8. A description of the recording system for:
a. The type design, including relevant design information, drawings and test reports, including inspection records of test specimens.
b. The means of compliance.
c. The compliance documentation (compliance check list, reports...).

9. A description of the record keeping system to comply with 21.A.55 and 21.A.105.

10. A description of the means by which the organisation monitors and responds to problems affecting the airworthiness or operational suitability of its product during design, production and in service in particular to comply with 21.A.3 (see also GM No. 1 to 21.A.239, paragraphs 3.1.4(s) and (u)).

11. The names of the design organisation authorised signatories. Nominated persons with specific responsibilities such as mentioned in 21.A.33 and 21.A.35 should be listed.

12. (Reserved).

13. A clear definition of the tasks, competence and areas of responsibility of the Office of Airworthiness.

14. A description of the procedures for the establishment and the control of the maintenance and operating instructions (see 21.A.57, 21.A.61, 21.A.107, 21.A.119, 21.A.120A and 21.A.449).

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

16. A description of the procedures for the establishment and the control of the operational suitability data (see 21.A.57, 21.A.62, 21.A.108, 21.A.119 and 21.A.120B).

<ED Decision 2014/007/R small 'operational suitability' additions>

AMC No. 2 to 21.A.243(a) Data requirements - Model content of handbook for organisations designing minor changes to type design or minor repairs to products

21.A.243(a)

Part 1.Organisation
1.1 Objective of handbook and binding statement
1.2 Responsible person for administration of handbook
1.3 Amendment procedure
1.4 List of effective pages
1.5 Distribution list
1.6 Presentation of design organisation (including locations)
1.7 Scope of work (with identification of type and models of products)
1.8 Organisation charts

1.9 Human resources
1.10 Management staff
1.11 Certifying personnel (see GM No. 2 to 21.A.243(d), paragraph 2)
1.12 Independent system monitoring
Part 2.Procedures
2.1 Management of changes to type design and design of repairs
- configuration control
- classification
- approval of minor changes to type design and minor repairs

2.2 Control of design sub-contractors
2.3 Collecting/Investigating of failures, malfunctions and defects
2.4 Co-ordination with production
2.5 Documentation control
- in relations with the changes and repairs
- in relation with failures/malfunctions and defects (i.e. Services Bulletins)

2.6 Record keeping

AMC-ELA No 1 to 21.A.243 Data — Design organisation handbook

21.A.243

The organisation is responsible for ensuring that the type design complies with the applicable type- certification basis, the applicable operational suitability data certification basis and the environmental protection requirements. This includes components that are part of the product, but are designed by external parties, and that are not covered by the applicable and individual parts-related (ETSO) approvals or (type) certificates.

To discharge this responsibility, the DOA implements practised methods to ensure that there are adequate means to positively establish and verify the compliance of the design and the associated documentation that is generated. The completeness of those methods is documented within the design organisation handbook (DOH), together with the required supporting and company-specific definitions.

The extent of the documentation, and the associated training, is mandated only to the extent that is required to be able to demonstrate that the generated type designs, design changes or repair designs comply with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements, and that the continued airworthiness activities are properly conducted. If evidence is found that the system described is not effective, then enhanced documentation may be one of the means, but not the only possible means, to rectify that situation.

The documentation of the elements within the DOH may be limited to workflow definitions (e.g. flow charts, process cards, or similar items) or to forms that are sufficiently process-oriented. If ERP systems or other IT systems that manage workflows are used, separate workflow documentation is not necessary, as long as the workflow can be demonstrated during surveillance activities on the basis of the IT system that is applied.

The ‘practising of methods’ is confirmed by observing that the methods are practised in an organised and repeatable manner on several examples. Those methods do not automatically require detailed documentation if they are otherwise defined. Nevertheless, ‘practised methods’ should be at least identified with a declarative statement.

The documentation at least covers the relevant items in the list below:

1. A unique identifier for the DOH, and a means to identify and record its revision status.
2. The name of the organisation and the address of its major place of activity, including any side offices where DAS functions as per AMC-ELA No 2 to 21.A.239(a) are performed under the DOA. If this location differs from the legal place of business, both addresses should be provided. Floor plans, or similar data, are not required.
3. A statement signed by the head of the design organisation (HDO) confirming that the DOH will be complied with at all times, and that it is used as a basic working document (i.e. a binding declaration).
4. A statement of the scope of the DOA (refer to GM-ELA No 1 to 21.A.251), which lists the key technologies used for airframe design and propulsion concepts on the projects in that scope.

5. The title and the name of the HDO, HoA and ISM, with statements of their accountability per AMC-ELA No 1 to 21.A.239(a). The delegation of tasks without responsibility does not affect accountability, and it is not required to be mentioned within the DOH.
6. The identification of the formal position and the reporting lines of the HDO, HoA and ISM within the company, possibly, but not necessarily, by means of an organisational chart.
7. A statement that the HDO assumes all the duties and responsibilities associated with the DOA, unless delegation of responsibility, beyond the delegation of tasks, is applied. In such a case, the allocation of responsibilities should be shown along with this statement.
8. A statement that the HoA is the formal point of contact for EASA.
9. Definitions of the required competences and qualifications that are necessary for the HDO and the HoA (which may be consolidated if both functions are provided by one person), and for design engineers, CVEs and ISMs.
10. A listing of the CVEs, either directly in the DOH or in a separate source (a document, listing, the intranet, etc.) that is linked to the DOH, and this data should be easily accessible to everyone concerned within the company. This list should be made available to EASA in its current version.
11. The approximate size of the company in full-time equivalent staff members, accurate enough to determine the related fees and charges that are laid down in Commission Regulation (EU) No 319/2014 (the Fees and Charges Regulation). This should include a declaration that the company ensures that the numbers and the qualifications of the staff involved in the design activities are adequate, that the company monitors these aspects, and that it takes action if necessary.
12. A confirmation that any significant changes to the DO, and any changes to the organisation that affect the contents of the DOH, will be notified to EASA in a timely manner by the responsible person defined in the DOH.
13. A confirmation that, when changes to the organisation occur that affect the documentation required here, the DOH is kept up to date by the responsible person defined in the DOH, but under the responsibility of the HDO, or their delegate. Amendments to the DOH should be released by the HDO, or by their delegate, and distributed according to the implemented method for the control of documented information, to locations that are identified in a generic or document-specific distribution list, including the responsible design organisation approval team leader (DOATL).
14. A definition of the methods that are practised to verify the effectiveness of the elements of the DAS that are stated in this listing. The main targets of Subpart J are to ensure that the type design of the product complies with the applicable type-certification basis, the applicable operational suitability data certification basis and the environmental protection requirements, and that the continued airworthiness activities are properly conducted. The surveillance mechanisms that are used may include structured experience exchanges, regular quality meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the development, planned and unplanned audits, or other similar means. Corrective actions that are identified should be followed up, and the means of resolution should be recorded. The DOH should define how this is accomplished.
15. A declaration that control methods are practised, and that the general principles of the applied document revision and access management processes ensure the use of current information.
16. A general identification of the documentation that is the result of all the design functions in relation to the airworthiness, operational suitability and environmental protection approvals, and continued airworthiness, each one of which should be commensurate with the complexity of the product and the risk level in terms of its content, style and format, including:
    a. a listing of the document types that form the type design, such as, for example, specifications, drawings, bills of materials, instructions, and other documents;
    b. a listing of the document types that form the compliance documentation, such as, for example, compliance reports, compliance summary documents, compliance checklists, means of compliance checklists, manuals, instructions for continued airworthiness (ICAs), master minimum equipment lists (MMELs) (if required), and others;
    c. a listing of the document types that form the change and repair design-specific documentation, such as classification matrices and approvals of minor changes, repairs, or production deviations;

d. a listing of the documents related to continued airworthiness activities (information and instructions such as, for example, service bulletins/service instructions), if not already listed to address point a.

17. A declaration and a definition of the principles that are applied, and the accepted related duties, of the key elements of the DAS, as defined in AMC-ELA No 2 to 21.A.239(a). The definition of the elements can be provided by various means, such as precise forms that guide the user through the process, workflow modelling in IT-based design or document management systems, process charts, flow diagrams, classical process definition documents, or other comparable means that are commensurate with the complexity and the criticality of the products. If references are made to other documents that are outside the DOH, the DOH should contain a listing of those documents.
18. A confirmation that methods are practised that enable adequate airworthiness coordination with the applicant for, or the holder of, the production approval. Dedicated procedures and/or DO–PO agreements for the purpose of airworthiness coordination with the production approval holder are not required if the design and the production entities work within one consolidated team, or if the control of airworthiness-related information is conducted by the same group of persons for both design and production. However, it should be described how any occurrences, and any unintentional deviations from the approved design data that occur in production (i.e. concessions or non-conformances) are handled within the design organisation, and when a concession process or a direct approval of such non-conformities under the DOA is sought, for example by using the change process. In addition, the methods/processes that are required by other AMC-ELA and GM-ELA should be defined, either directly in the DOH or in a document that is linked to it.
19. A declaration and a definition of the method applied to accept design work that is conducted by external parties, in line with AMC-ELA No 1 to 21.A.239(c).
20. The identification of the design subcontractors and satellite locations that operate under the DAS of the design organisation, and that fulfil functions required by the DAS, or are directly involved in critical aspects of compliance demonstration, such as, for example, flutter investigations and analyses. This identification may be an integral part of the DOH, or it may be provided in a separate listing that is only identified from within the DOH.
21. A reference to a flight test operations manual (FTOM) that is adequate for the flight test activities of the design organisation. If both the design and the manufacturing entities work within one consolidated team, it is sufficient to have FTOM procedures defined for only one of the entities. The FTOM shall then identify the workflow that defines how to issue flight conditions and PtFs for the purpose of conducting factory acceptance test flights.

AMC-ELA No 2 to 21.A.243 Data — Policies and procedures in relation to flight tests

21.A.243

In order to conduct flight test activities, the DOA is required to implement policies and procedures for conducting these activities that include a proportionate and efficient risk and safety management system. This approach is documented either within a separate flight test operations manual (FTOM) or as an integral part of any other valid manual of the organisation, such as the DOH, or any other relevant quality manual. The FTOM, or its equivalent, should be proportionate to the risk of the product and the complexity of the organisation.

The risk and safety management system, documented within the FTOM, or its equivalent, covers the following aspects:

- The definition of the key qualifications, responsibilities and accountabilities of the staff involved in conducting the flight tests, which covers at least:
  - the head of flight test (HoFT), who coordinates all the activities related to flight test and assumes responsibility for flight testing (this can be shared with other management positions within the DO);
  - the flight test engineer, who manages individual flight tests (or test campaigns);
  - the test pilot, who conducts any flight tests;
  - the flight test mechanic, who conducts all maintenance tasks and configuration changes to the test aircraft.

  One person who has adequate qualifications may act in more than one role. The HoFT should have a direct reporting line to the HDO.

- A method that provides practical guidance on conducting a hazard assessment to classify flight tests according to the risk involved. At least two categories should be identified: Category 1 for high-risk flight tests, and Category 2 for medium- and low-risk flight tests.
- Definitions of generic risk mitigation strategies such as the use of minimum and maximum altitudes or airspeed safety margins, and safety rules to be obeyed for the typical major test phases and missions.
- Identification of the aircraft-related safety equipment that needs to be available, including references to the maintenance requirements of this equipment.
- A policy on how to alert and involve rescue services, such as the fire brigade or emergency physicians, in order to allow sufficiently short reaction times.
- Crew qualifications, including requirements for the qualifications to be current and for crew (refresher) training, as adequate.
- For aircraft with MTOMs of 2 000 kg or more:
    - the provisions of EASA Part-21 Appendix XII apply.
    - the minimum flight experience per year should be:
        - for pilots: 50 hours. In addition:
            - for pilots who have flight test ratings, the 50 hours should include 20 flight test hours in any flight test category;
            - for pilots to perform Category 3 flight tests, their flight test experience should be expressed in terms of the number of flights that led to the issuing of a certificate of airworthiness (CofA) (e.g. first flights);
            - for pilots to perform Category 4 flight tests, their minimum flight test experience should be proportionate to the activity envisaged.
- Crew composition and duty time limitations that are adequate for the kind of testing and the risk category of the flight tests conducted by the DOA.

The procedural aspects, documented within the FTOM, or its equivalent, should cover the following aspects:

- The initiation and planning of a flight test activity, including, for example, but not limited to:
    - hazard analysis;
    - detailed flight test planning;
    - the generation and approval of flight conditions;
    - the definition and verification of the test-aircraft configuration;
    - preparation of the aircraft;
    - the integration, calibration and verification of any flight test equipment;
    - verification of the fitness of the aircraft for flight;
    - issuing or obtaining a PtF;
    - the preflight briefing, and conducting the flight test; and
    - debriefing and data reporting.

The FTOM, or its equivalent, identifies all the documents and records that are required to be generated or maintained in relation to the flight test, including the definitions for the authority to sign.

The FTOM, or its equivalent, identifies how training for flight tests is organised.

The definition of the methods required may be provided in different ways, including but not limited to flow charts, process descriptions, forms that are detailed enough to enforce adherence to the required workflow, workflow implementation in IT-based ERP systems, or similar means.

The implementation of the standard FTOM, including its associated process definitions and forms, ensures adherence to this AMC, and hence that there will be compliance with the relevant requirements of Part-21.

Any flight tests that are subcontracted to a third party should comply with the FTOM of the DOA, unless the third party has established an FTOM that is in compliance with Part-21, and its use has been agreed between the two organisations.

AMC-ELA No 1 to 21.A.243(d) Data — Statement of qualifications and experience

21.A.243(d)

Evidence of their qualifications and experience is documented for the persons who accept the duties defined for the following roles:

- head of the design organisation (HDO);
- head of airworthiness (HoA);
- independent system monitoring (ISM);
- compliance verification engineer (CVE).

The credentials of the HDO, HoA and ISM are provided to EASA using EASA Form 4-DOA. The form is published on the EASA webpage.

For the CVE, no individual statement is needed. CVEs are selected by the applicant/approval holder on the basis of their knowledge, background and experience as defined in the DOH. When necessary, complementary training should be established to ensure that CVEs have sufficient background and knowledge in the scope of their authorisation.

The organisation maintains a record of the CVE personnel, which includes details of the scopes of their authorisations. The CVE personnel are given reasonable access on request to their own records. As part of its investigations, EASA has the right to access the data held in such a system.

The following minimum information on each of the CVEs should be kept on record:

a) name,
b) date of birth,
c) experience and training,
d) position in the organisation,
e) scope of the authorisation,
f) date of the first issue of the authorisation,
g) if applicable, the date of expiry of the authorisation,
h) identification number of the authorisation,
i) documented acceptance of the nomination by the CVE.

Evidence of the authorisation is provided in a reasonably accessible way within the company, so that a staff member who needs to be aware of the authorisation can verify their status whenever needed. This can be achieved by the provision of accessible listings of the nominated staff members, or by other means. The issuing of individual badges or passes is not required.

The organisation should keep the records of a CVE for at least 2 years after the CVE has ceased to be employed by the organisation, or 2 years after the withdrawal of the CVE's authorisation, whichever occurs first.

GM No. 1 to 21.A.243(d) Statement of qualifications and experience

21.A.243(d)

1. Purpose

This GM provides guidelines on the following points:

- Who are the persons covered by 21.A.243(d)?
- What is requested from the applicant for these persons?

2. Who are the persons?

Three different types of functions are named or implicitly identified in the requirements of Part 21 Subpart J or in associated AMC and GM, using qualified and experienced personnel:

- the Chief Executive [see GM No. 1 to 21.A.239(a), para. 3.1.2, GM 21.A.249, GM 21.A.265(b)]
- the other management staff:
  - the Head of the design organisation [see GM No. 1 to 21.A.239(a), para.3.1.2, GM No. 1 21.A.245, para.4.1, GM 21.A.265(b)]
  - the Chief of the Office of Airworthiness, or [see GM No. 1 to 21.A.245, para. 4.2]
  - the Chief of the independent monitoring function of the design assurance system [see 21.A.239(a)(3) and AMC No. 1 to 21.A.243(a), para.2]
- the personnel making decisions affecting airworthiness, operational suitability and environmental protection:
  - compliance verification engineers [see GM No. 1 to 21.A.239(a), para.3.1.3; AMC 21.A.239(b)]
  - personnel of the Office of Airworthiness making decisions affecting airworthiness, operational suitability and environmental protection, especially those linked with the 21.A.263 privileges

(signing documents for release, approving classification of changes and repairs, and granting the approval of minor changes and minor repairs, granting the approval of SBs, and minor revisions to the aircraft flight manual) [see GM No. 1 to 21.A.239(a), para. 3.1.4]

3. Kind of statement

3.1 Chief Executive

The Chief Executive should provide the necessary resources for the proper functioning of the design organisation.

A statement of the qualification and experience of the Chief Executive is normally not required.

3.2 Other management staff

The person or persons nominated should represent the management structure of the organisation and be responsible through the Head of design organisation to the Chief Executive for the execution of all functions as specified in Part 21, Subpart J. Depending on the size of the organisation, the functions may be subdivided under individual managers.

The nominated managers should be identified and their credentials furnished to the Agency on EASA Form 4-DOA (see EASA website: http://easa.europa.eu/certification/application-forms.php) in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the design activities as performed by the organisation.

The responsibilities and the tasks of each individual manager should be clearly defined, in order to prevent uncertainties about the relations, within the organisation. Responsibilities of the managers should be defined in a way that all responsibilities are covered.

3.3 Personnel making decisions affecting airworthiness, operational suitability and environmental protection

For these personnel, no individual statement is required. The applicant should show to the Agency that there is a system to select, train, maintain and identify them for all tasks where they are necessary.

The following guidelines for such a system are proposed:

- These personnel should be identified in the handbook, or in a document linked to the handbook. This, and the corresponding procedures, should enable them to carry out the assigned tasks and to properly discharge associated responsibilities.
- The needs, in terms of quantity of these personnel to sustain the design activities, should be identified by the organisation.
- These personnel should be chosen on the basis of their knowledge, background and experience.
- When necessary, complementary training should be established, to ensure sufficient background and knowledge in the scope of their authorization. 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 relevant for the particular role.
- Training policy forms part of the design assurance system and its appropriateness forms part of investigation by the Agency within the organisation approval process and subsequent surveillance of persons proposed by the organisation.
- This training should be adapted in response to experience gained within the organisation
- The organisation should maintain a record of these personnel which includes details of the scope of their authorisation. The personnel concerned should be provided with evidence of the scope of their authorisation.
- The following minimum information should be kept on record:
  a) Name
  b) Date of birth
  c) Experience and training
  d) Position in organisation
  e) Scope of the authorisation
  f) Date of first issue of the authorisation
  g) If appropriate, date of expiry of the authorisation
  h) Identification number of the authorisation.

The record may be kept in any format and should be controlled.

- Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records do not become accessible to unauthorised persons.
- Personnel should be given access to their own record.
- Under the provision of 21.A.257 the Agency has a right of access to the data held in such a system.
- The organisation should keep the record for at least two years after a person has ceased employment with the organisation or withdrawal of the authorisation, whichever is the sooner.

<ED Decision 2014/007/R small 'operational suitability additions>

GM No. 2 to 21.A.243(d) Data requirements - Statement of the qualification and experience- Organisations designing minor changes to type design or minor repairs to products

21.A.243(d)

For organisations designing minor changes to type design or minor repairs to products, the statement of the qualifications and experience required by 21.A.243(d) should be addressed as follows :

1. The nominated managers should be identified and their credentials submitted to the Agency on EASA Form 4 - DOA (see EASA website: http://easa.europa.eu/certification/application-forms. php) in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the design activities as performed by the organisation.
2. The persons responsible to:
   - classify changes to type design or repairs
   - verify compliance [21.A.239(b)]
   - approve minor changes to type design and minor repairs [21.A.263(c)(2)]
   - issue information or instructions [21.A.263(c)(3)]

   should be selected by the organisation in accordance with a procedure and criteria agreed with the Agency.

AMC-ELA No 1 to 21.A.245 Approval requirements

21.A.245

The organisation demonstrates adequate staffing, infrastructure, access to facilities and discharge of responsibilities by means of the continued ability to certify type designs after it has ensured that there is positive compliance with the applicable type-certification basis, the operational suitability data certification basis and the environmental protection requirements. Adequate staffing is observed on the basis of reasonable workload, working time and project completion times.

The applicant should have access to:

- workshops and production facilities that are suitable for manufacturing prototype models and test specimens; and
- accommodation and test facilities that are suitable for carrying out the tests and measurements needed to demonstrate compliance with the certification specifications and the environmental protection requirements. The test facilities may be subject to additional technical conditions related to the nature of the tests performed.

The HDO for which an application for approval has been made has the direct or functional responsibility for all the departments of the organisation that are responsible for the design of the product. If the departments responsible for the design are functionally linked, the HDO still has the ultimate responsibility for the compliance of the organisation with Subpart J.

The function of the head of airworthiness (HoA) should be established with a direct reporting line to the HDO, and the person who fulfils this function is required to have a direct contract with the DO.

Responsibilities for all the tasks related to type investigations should be assigned in such a way that there are no gaps in authority.

Combinations of responsibilities are acceptable where:

- the role of the HDO may be fulfilled by the chief executive (CE) of the legal entity, who may also fill the role of the AM within a parallel POA;
- the HDO and the HoA are the same person, provided that the person has the competence to fulfil both functions;

- the HoA and the ISM are the same person, provided that the ISM assessment of working activities that directly affect the person in their second role is conducted by another independent person, on behalf of the ISM;
- the HDO and the ISM are the same person, provided that the auditing activity is conducted by another independent person, under the responsibility of the ISM;
- external persons are acceptable for all or for parts of the role of the ISM;
- a part-time HoA is acceptable, provided that the person is directly involved in the DOA, and not by an agreement between two DOAs, and provided that the availability of the person ensures that response times will be adequate;
- a CVE may also hold any of the other nominations, as long as there is an independent check of compliance per AMC-ELA No 1 to 21.A.239(b).

Due to the typically small size of the design organisations and the low complexity and criticality of the products within the scope of AMC-ELA, no specific provisions are required to ensure that there is full and efficient coordination between departments and within departments in respect of airworthiness, operational suitability and environmental protection matters, provided that evidence of this coordination can be observed during the surveillance activities.

GM-ELA No 1 to 21.A.247 Changes in design assurance system

21.A.247

The following changes are considered to be significant:

- Changes in ownership:
  - relocation of the major place of activity to a different geographic location, city, airfield or similar. Relocation within one building, or to a neighbouring building on the same premises, or a similar move, does not require prior approval, as long as there is no negative effect on the interface with or the access to the related production organisation;
- Changes in the scope of approval;
- Changes in the nomination of, or the allocation of responsibilities to, the HDO, the HoA, or the ISM; or
- Changes in the parts of the organisation that contribute directly to the airworthiness, operational suitability or environmental protection functions, such as changes to the principles or to the procedures related to:
  - type certification;
  - the classification of changes and repairs as ‘major’ or ‘minor’;
  - the handling of major changes and major repairs;
  - the approval of the design of minor changes and minor repairs;
  - the issue of information and instructions under the DOA privileges;
  - the approval of minor revisions to the aircraft flight manual;
  - the approval of the designs of major repairs;
  - continued airworthiness or continued operational suitability; or
  - configuration control if airworthiness, operational suitability or environmental protection is affected.

Significant changes require EASA approval prior to their implementation. The organisation should submit the application for approval of a significant change to the DOA, using EASA Form 82, to EASA sufficiently ahead of time, stating the nature of any significant change, and supported by a draft of the updated version of the DOH, so that the required extent of the investigation can be agreed upon and conducted in a reasonable way. The focus of the assessment is the continued ability to comply with the provisions of Subpart J.

Any other changes to the approved organisation do not require prior EASA approval, and will be addressed as part of the regular DOA surveillance.

To ensure that changes do not result in non-compliance with the applicable requirements of Subpart J, it is in the interest of both EASA and the approval holder to establish a relationship and to exchange data during the implementation of a change. As part of this relationship, the company should consider informing EASA sufficiently ahead of the next regular surveillance activity of any non-significant changes.

GM No. 1 to 21.A.245 Requirements for approval

21.A.245

See 21.A.245

1 General. The data submitted in accordance with 21.A.243 should show that sufficient skilled personnel are available and suitable technical and organisational provisions have been made for carrying out the Type Investigation defined by GM No. 1 to 21.A.239(a), paragraph 2.3.

2 Personnel. The applicant should show that the personnel available to comply with 21.A.245(a) are, due to their special qualifications and number, able to provide assurance of the design or modification of a product, as well as the compilation and verification of all data needed to meet the applicable CS and environmental protection requirements while taking into account the present state of the art and new experience.

3 Technical. The applicant should have access to:

a. Workshops and production facilities which are suitable for manufacturing prototype models and test specimens.

b. Accommodation and test facilities which are suitable for carrying out tests and measurements needed to demonstrate compliance with the CS and environmental protection requirements. The test facilities may be subjected to additional technical conditions related to the nature of tests performed.

4 Organisation. The data submitted in accordance with 21.A.243 should show that:

4.1 The Head of the design organisation for which an application for approval has been made, has the direct or functional responsibility for all departments of the organisation which are responsible for the design of the product. If the departments responsible for design are functionally linked, the Head of the design organisation still carries the ultimate responsibility for compliance of the organisation with Part 21Subpart J.

4.2 An Office of Airworthiness, or equivalent function, has been established and staffed on a permanent basis to act as the focal point for co-ordinating airworthiness, operational suitability and environmental protection matters (see GM No. 1 to 21.A.239 (a) paragraph 3.1.4); it reports directly to the Head of the design organisation or is integrated into an independent quality assurance organisation reporting to the Head of the design organisation.

4.3 [Reserved]

4.4 Responsibilities for all tasks related to Type Investigations are assigned in such a way that gaps in authority are excluded.

4.5 The responsibility for a number of tasks as in paragraph 4.4 may be assigned to one person especially in the case of simple projects.

4.6 Co-ordination between technical departments and the persons in charge of the system monitoring required by 21.A.239(a)(3) has been established :

a. to ensure quick and efficient reporting and resolution of difficulties encountered using the handbook and associated procedures

b. to maintain the design assurance system

c. to optimise auditing activities.

<ED Decision 2014/007/R small changes 'operational suitability'>

GM No. 2 to 21.A.245 Requirements for approval - Organisations designing minor changes to type design or minor repairs to products

21.A.245

The data submitted in accordance with 21.A.243 should show that:

1. The manager responsible for design has the direct or functional responsibility for all departments of the organisation which are involved in the design of minor changes to type design or minor repairs to products.
2. Person(s) have been nominated to liaise with the Agency and to co-ordinate airworthiness and environmental protection matters. Their position in the organisation should allow direct report to the manager responsible for design.
3. Responsibilities for all tasks related to the design and approval of minor changes to type design or minor repairs to products are assigned to ensure that all areas are covered
4. The responsibility for a number of tasks as in paragraph 3 may be assigned to one person especially in the case of simple projects.

GM 21.A.247 Significant changes in the design assurance system

21.A.247

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

1. Organisation
   - Relocation to new premises (see also GM 21.A.249)
   - Change in the industrial organisation (partnership, suppliers, design work sharing) unless it can be shown that the independent checking function of the demonstration of compliance is not affected
   - Change in the parts of the organisation that contribute directly to the airworthiness, operational suitability or environmental protection (independent checking function, office of airworthiness [or equivalent])
   - Change to the independent monitoring principles (see 21.A.239(a)(3))
2. Responsibilities
   - Change of the management staff
     - the Head of the design organisation [GM No. 1 to 21.A.239(a), para.3.1.2, GM No. 1 to 21.A.245, para.4.1, GM 21.A.265(b)]
     - the Chief of the Office of Airworthiness [GM No. 1 to 21.A.245, para. 4.2]
     - the Chief of the independent monitoring function of the design assurance system [21.A.239(a)(3) and AMC No. 1 to 21.A.243(a), para.2]
   - New distribution of responsibilities affecting airworthiness, operational suitability or environmental protection
   - For organisations designing minor changes to type design or minor repairs to products, change of the persons identified in GM No. 2 to 21.A.243(d).
3. Procedures

   Change to the principles of procedures related to :
   - the type certification
   - the classification of changes and repairs as ' major ' or ' minor ' [21.A.263(c)(1)]
   - the treatment of major changes and major repairs
   - the approval of the design of minor changes and minor repairs [21.A.263(c)(2)]
   - the issue of information and instructions under the privilege of 21.A.263(c)(3)
   - the approval of minor revisions to the Aircraft Flight Manual [21.A.263(c)(4)]
   - the approval of the design of major repairs [21.A.437 or 21.A.263(c)(5)]
   - continued airworthiness or continued operational suitability(see 21.A.3)
   - the configuration control, when airworthiness, operational suitability or environmental protection is affected
   - the acceptability of design tasks undertaken by partners or sub-contractors [21.A.239(c)].
4. Resources
   - Substantial reduction in number and/or experience of staff (see 21.A.245(a)).

<ED Decision 2014/007/R small 'operational suitability' addition>

GM 21.A.249 Transferability

21.A.249

1. Transfer of the approval would normally only be agreed in cases where the organisation itself remains substantially unchanged.
2. An acceptable transfer situation could be for example a change of company name (supported by the appropriate certificate from the National Companies Registration Office or equivalent) but with no changes to site address or Chief Executive. However, if the same legal entity were to relocate to new premises with a new Chief Executive and/or new departmental heads, then a substantial investigation by the Agency would be necessary such that the change would be classified as a re-approval.
3. In the event of receivership there may be good technical justification for continuation of the approval provided that the company continues to function in a satisfactory manner. It is likely that at a later stage the approval might be surrendered by the receiver or transferred to another legal entity in which case the former paragraphs apply.

GM No. 1 to 21.A.251 Terms of approval

21.A.251

1. The terms of approval are stated on the certificate of approval issued by the Agency. The certificate states the scope of work and the products, changes or repairs thereof, with the appropriate limitations for which the approval has been granted. For design organisation approval covering type certification or ETSO authorisation for APU, the list of product types covered by the design assurance system should be included.
2. Approval of a change in the terms of approval in accordance with 21.A.253 will be confirmed by an appropriate amendment of the certificate of approval.
3. The certificate references the handbook of the approved design organisation, provided in accordance with 21.A.243. This handbook defines the tasks which may be performed under the approval.
4. Scopes of work are, for example, 'subsonic turbojet aeroplanes', 'turbopropeller aeroplanes', 'small aeroplanes', 'rotorcraft'... Technologies are quoted in the scope of work when it is considered by the Agency as a limitation for the design organisation approval.
5. For repair design activities, the certificate states the scope of work with the appropriate limitations for which the approval has been granted.

GM No. 2 to 21.A.251 Terms of approval - Organisations designing minor changes to type design or minor repairs to products

21.A.251

Terms of approval issued for organisations designing minor changes to type design or minor repairs to products should contain:

1. Scope of work
   This design organisation approval has been granted for:
   - designing minor changes to type design or minor repairs to [aircraft, engine, propeller] in accordance with the applicable CS and environmental protection requirements,
   - demonstrating and verifying the compliance with these CS and environmental protection requirements.
2. Category of products
   Any other indication if the Agency has found a limitation related to aircraft systems or technologies and reducing the scope as defined in paragraph 1.
3. Privileges
   The holder of this approval is entitled to:
   List of the privileges granted with the approval, pursuant to 21.A.263(c)(1), (2) and (3).

GM-ELA No 1 to 21.A.251 Terms of approval

21.A.251

1. The terms of approval are stated on the certificate issued by EASA. The certificate states the scope of work and the products, changes or repairs to them, with the appropriate limitations for which the approval has been granted. For a design organisation approval (DOA) that covers a type certification, the list of product types covered by the design assurance system (DAS) is included.
2. A change to the terms of approval in accordance with point 21.A.253 will lead to an amendment of the certificate of approval.
3. The certificate of approval references the design organisation handbook (DOH), which has been provided in accordance with point 21.A.243. This handbook defines the tasks that may be performed under the approval.
4. Scopes of work are defined, for example, by ‘small aeroplanes’, ‘VLA’, ‘LSA’, ‘Balloons’, ‘Airships’, etc. If the product within the framework defined in AMC-ELA No 1 to 21.A.231 is a subset of that term (for example, not for all small aeroplanes), corresponding limitations are incorporated into the terms of approval for the product category. Technologies are quoted in the scope of work when they are considered by EASA to be limitations for the DOA.
5. For repair design activities, the certificate of approval states the scope of work, along with the appropriate limitations for which the approval has been granted.

AMC-ELA No 1 to 21.A.253 Changes to the terms of approval

21.A.253

An application for an approval of changes to the terms of approval should be filed by the applicant using EASA Form 82.

GM-ELA No 1 to 21.A.257 Investigations — Arrangements

21.A.257

Investigations by EASA may include enquiries, questions, discussions, explanations and inspections of products that are developed under the scope of approval of the DOA.

The design organisation should assist EASA in its investigations by providing appropriate means to allow EASA to perform these inspections and audits, such as meeting rooms and office support.

If design partners or subcontractors fulfil nominated functions within the DO, for example as CVEs, the organisation should coordinate access to the subcontractor, when it is explicitly requested by EASA on a specific subject.

Any failure to allow EASA access to facilities to conduct investigations will be classified as a level 1 finding.

GM 21.A.257(a) Investigations

21.A.257(a)

Arrangements that allow the Agency to make investigations include the complete design organisation including partners, sub-contractors and suppliers, whether they are in the State of the applicant or not, assisting and co-operating with the Agency in performing inspections and audits conducted during initial assessment and subsequent surveillance.

Assistance to the Agency includes all appropriate means associated with the facilities of the design organisation to allow the Agency to perform these inspections and audits, such as a meeting room and office support.

AMC-ELA No 1 to 21.A.263 Privileges

21.A.263

(a) The privilege to classify minor/major changes and repairs is granted in accordance with 21.A.263(c)(1) on the basis of the application of the method defined in response to AMC-ELA No 2 to 21.A.239(a).

The defined method should cover the following points:

- the identification of changes to a type design or repairs, including the applicable requirements as per the type certification data sheet (TCDS);
- the classification of changes as major if additional work is required to demonstrate compliance with the applicable requirements;
- the classification of changes as minor if no additional work is required to demonstrate compliance with the applicable requirements;
- the recording of the classification, and documented justification of the classification, for those cases that are not straightforward;
- approval of the classification by the authorised signatories.

It is acceptable to use the same classification process for repairs as for changes. Nevertheless, GM 21.A.435(a) should be taken into consideration when classifying repairs.

(b) The privilege to approve minor changes and minor repairs is granted together with the privilege of classification, on the basis of the application of the method defined in response to AMC-ELA No 2 to 21.A.239(a).

The defined method should cover the following points:

- the identification of whether additional work is required to demonstrate compliance with the applicable requirements;
- determination of the required compliance documentation and the verification by following the same workflow as the one applied for the initial design and certification;
- approving the repair under the DOA privileges by using a formalised approach. This may be, for example, defined by an adequately structured form that provides:
  - adequate identification of the change;
  - the identification of the applicable requirements;
  - reference to compliance documents;
  - the identification of the effects on limitations and approved documentation (if any);

- evidence that independent checking has been conducted;
- the date and evidence of the approval given by the relevant nominated staff.

- identification of the authorised signatories for the approval of minor changes and minor repairs;
- a statement that the design of minor changes/repairs is conducted using the same provisions as those defined for the design work during the initial design and certification. It is acceptable to use the same approval process for minor repairs as the one used for minor changes.

(c) Instructions required by the certification specifications, such as the maintenance manual, the MMEL, etc., are usually prepared within the type investigation process to comply with the certification requirements. These documents are covered by the type investigation process. The generation and publication of information or instructions related to continued airworthiness, including updates to the above-mentioned ICA and MMEL and to any related design activity, are handled according to the same principles as any type design, change design or repair design activity/documentation if no separate method/process as per GM 21.A.263(c)(3) is defined. The DOH should state how documents under this privilege are issued and distributed to the aircraft owner and to other interested parties. Using the change/repair process would be the simplest way for small companies to do this.

(d) The approval of minor revisions to the AFM and its supplements should contain the following statement: 'Revision No [YY] to AFM (or supplement) ref. [ZZ] is approved under the authority of DOA ref. EASA. 21J. [XXXX].'. Such a change is treated as a change to the type certificate, as the AFM is formally a part of the type certificate, and it is consequently classified on the basis of the application of the method defined in response to AMC-ELA No 2 to 21.A.239(a), and identified as being related to a 'minor' design change. Administrative revisions to the AFM are also expected to be classified as 'minor'. The following revisions to the AFM are defined as minor revisions:

1. editorial revisions or corrections to the AFM;
2. changes to parts of the AFM that are not required to be approved by EASA;
3. changes to limitations or procedures that are achieved without altering or exceeding the certification data;
4. conversions of units of measurement that were previously approved by the FAA or by EASA, and that are added to the AFM in a previously approved manner;
5. the addition of aircraft serial numbers to an existing AFM if the aircraft configuration, as related to the AFM, is identical to the configuration of the aircraft already in that AFM;
6. the removal of references to aircraft serial numbers that are no longer applicable to that AFM;
7. the translation of an EASA-approved AFM into the language of the State of Design or the State of Registration;
8. AFM revisions as part of minor changes to a type design.

(e) In order to be granted a privilege to approve flight conditions (FC) and to issue PtFs, the design organisation should have in place an adequate FTOM in accordance with AMC-ELA No 2 to 21.A.243 that is limited to the products designed and produced by the company, and over which the company has full configuration control. Authorised signatories shall be defined within the FTOM, or its equivalent.

In such a case, the FTOM (or another document) should contain a defined method that addresses the following points if the (FC) are approved under the DOA privileges:

- FC that must be complied with to safely perform a flight must be determined in accordance with point 21.A.708;
- management of the aircraft configuration, including the handling of changes to the aircraft configuration operated under a PtF;
- the documentation of substantiations of flight conditions;
- approval under the privilege using EASA Form 18A defined in AMC 21.A.263(c)(6), and the definition of the authorised signatories.

For a PtF that is issued under the privilege, a method should be defined that addresses the following points:

- how conformity with the approved conditions is established, documented and attested;
- the issue of the PtF under the DOA privilege (form), and the authorised signatories;
- the interface with the local authority for the flight.

Further guidance is provided in AMC 21.A.263(c)(6) and (c)(7), as well as in the GM and AMC related to Subpart P.

GM 21.A.263(b) DOA privilege related to compliance documents

21.A.263(b)

A compliance document is the end result of a certification process, where the demonstration of compliance is recorded. For each specific certification process, the Agency is involved in the process itself at an early stage, especially through the establishment of the certification programme. The inspections or tests under 21.A.257(b) may be performed at various stages of the whole certification process, not necessarily when the compliance document is presented.

Therefore, according to the scheduled level of involvement, the Agency should agree with the DOA holder documents to be accepted without further Agency verification under the DOA privilege of 21.A.263(b).

AMC 21.A.263(b)(1) Compliance documents with conditions related to engine or propeller without a type-certificate or with unapproved changes and fitted on aircraft for which a permit to fly is requested

21.A.263(b)

The establishment of flight conditions may include conditions related to engines/propellers without a type-certificate or with unapproved changes and fitted on the aircraft for which a permit to fly is requested. These conditions (i.e. installation, operating, maintenance conditions or limitations) are defined by the organisation responsible for the design of the engine/propeller and provided to the organisation responsible for the design of the aircraft.

When the organisation responsible for the design of the engine/propeller has a DOA, the establishment and substantiation of these conditions must be done under the relevant DOA procedures. For that purpose, the associated documentation must be processed like any other compliance document. It must be provided to the organisation responsible for the design of the aircraft that will use it for the establishment of the aircraft flight conditions.

AMC No. 1 to 21.A.263(c)(1) Procedure for the classification of changes to type certificate TC and repairs as minor or major

21.A.263(c)(1)

1. INTENT

This AMC provides the means to develop a procedure for the classification of changes to a TC and repairs. Each DOA applicant shoulf develop its own internal classification procedure following this AMC, in order to obtain the associated privilege under 21.A.263(c)(1) .

2. PROCEDURE FOR THE CLASSIFICATION OF CHANGES TO TYPE CERTIFICATE AND REPAIRS

2.1 Content

The procedure should address the following points:

- the identification of changes to a type certificate or repairs,
- classification,
- justification of the classification,
- authorised signatories, and
- supervision of changes to a type certificate or repairs initiated by sub-contractors.

For changes to a type certificate, thecriteria used for thw classification should be in compliance with 21.A.91 and GM 21.A.91.

For repairs, the criteria used for the classification should be in compliance with 21.A.435 and GM 21.A.435.

2.2 Identification of changes to a type certificate or repairs

The procedure should indicate how the following are identified:

- major changes to a type certificate or major repairs;
- those minor changes to a type certificate or minor repairs where additional work is necessary to demonstrate compliance with the CS and environmental protection requirements; and
- other minor changes to a type certificate or minor repairs requiring no further demonstration of compliance.

2.3 Classification

The procedure shoud show how the effects on airworthiness, operational suitability and environmental protection are analysed, from the very beginning, by reference to the applicable requirements.
If no specific CS or environmental protection requirements are applicable to the change or repairs, the above review should be carried out at the level of the part or system where the change or repair is integrated and where specific CS or environmental protection requirements are applicable.

2.4 Justification of the classification
All decisions of classification of changes to a type certificate or repairs as 'major' or 'minor' should be recorded and, for those which are not straightforward, also documented. These records should be easily accessible to the Agency for sample check.

2.5 Authorised signatories
All classifications of changes to a type certificate or repairs should be accepted by an appropriate authorised signatory.
The procedure should indicate the authorised signatories for the various products listed in the terms of approval.
For those changes or repairs that are handled by sub-contractors, as described under paragraph 2.6, it should be described how the DOA holder manages its classification responsibility.

2.6 Supervision of changes to a type certificate or repairs initiated by sub-contractors
The procedure should indicate, directly or by cross-reference to written procedures, how changes to a type certificate or repairs may be initiated and classified by sub-contractors and are controlled and supervised by the DOA holder.

<2016/007/R grammar corrections>

AMC No. 2 to 21.A.263(c)(1) Privileges - Organisations designing minor changes to a type certificate (CT) or minor repairs to products : classification procedure

21.A.263(c)(1)

1. Content
The procedure should address the following points:
   - configuration control rules, especially the identification of changes to a type certificate or repairs;
   - classification in compliance with 21.A.91 and GM 21.A.91 for changes and GM 21.A.435 for repairs;
   - justification of the classification;
   - authorised signatories.

2. Identification of changes to a type certificate or repairs
The procedure should indicate how the following minor changes to a type certificate or minor repairs are identified:
   - those minor design changes to a type certificate or minor repairs where additional substantiation data is necessary to demonstrate compliance with the CS or environmental protection requirements;
   - other minor design changes to a type certificate or minor repairs requiring no further demonstration of compliance.

3. Classification
The procedure should show how the effects on airworthiness, operational suitability and environmental protection are analysed, from the very beginning, by reference to the applicable requirements.
If no specific requirements are applicable to the change or the repair, the above review should be done at the level of the part or system where the change or repair is integrated and where specific CS or environmental protection requirements are applicable.
For repair, see also GM 21.A.435.

4. Justification of the classification
All decisions on classification of changes to a type certificate or repairs as 'minor' should be recorded and, for those which are not straightforward, also documented. These records should be easily accessible to the Agency for sample check.
It may be in the format of meeting notes or register.

5. Authorised signatories

All classifications of changes to a type certificate or repairs should be accepted by an appropriate authorised signatory.
The procedure should indicate the authorised signatories for the various products listed in the terms of approval.

<ED Decision 2016/007/R grammar>

AMC No. 1 to 21.A.263(c)(2) Procedure for the approval of minor changes to a type certificate (CT) or minor repairs

21.A.263(c)(2)

1. INTENT

This AMC provides themeans to develop a procedure for the approval of minor changes to a type certificate or minor repairs.
Each DOA applicant should develop its own internal procedures following this AMC in order to obtain the associated privilege under 21.A.263(c)(2).

2. PROCEDURE FOR THE APPROVAL OF MINOR CHANGES TO A TYPE CERTIFICATE OR MINOR REPAIRS

2.1 Content

The procedure should address the following points:
- compliance documentation;
- approval under the DOA privilege;
- authorised signatories;
- supervision of minor changes to a type certificate or minor repairs handled by sub-contractors.

2.2 Compliance documentation

For those minor changes to a type certificate or minor repairs where additional work to demonstrate compliance with the applicable CS and environmental protection requirements is necessary, compliance documentation should be established and independently checked as required by 21.A.239(b).
The procedure should describe how the compliance documentation is produced and checked.

2.3 Approval under the DOA privilege

2.3.1 For those minor changes to a type certificate or minor repairs where additional work to demonstrate compliance with the applicable CS and environmental protection requirements is necessary, the procedure should define a document to formalise the approval under the DOA privilege.

This document should include at least:
- identification and brief description of the change or repair and reasons for change or repair;
- applicable CS or environmental protection requirements and methods of compliance:
- reference to the compliance documents;
- effects, if any, on limitations and on the approved documentation;
- evidence of the independent checking function of the demonstration of compliance;
- evidence of the approval under the privilege of 21.A.263(c)(2) by an authorised signatory;
- date of the approval.

For repairs, see AMC 21.A.433(a).

2.3.2 For the other minor changes to a type certificate or minor repairs, the procedure should define a means to identify the change or repair and reasons for the change or repair, and to formalise its approval by the appropriate engineering authority under an authorised signatory. This function may be delegated by the Office of Airworthiness but should be controlled by the Office of Airworthiness either directly or through appropriate procedures of the DOA holder's design assurance system.

2.4 Authorised signatories

The persons authorised to sign for the approval under the privilege of 21.A.263(c)(2) should be identified (name, signature and scope of authority) in appropriate documents that may be linked to the handbook.

2.5 Supervision of minor changes to a type certificate or minor repairs handled by sub-contractors

For the minor changes to a type certificate or minor repairs described in 2.3.2, that are handled by sub-contractors, the procedure should indicate, directly or by cross-reference to written procedures, how

these minor changes to a type certificate or minor repairs are approved at sub-contractor level and the arrangements made for supervision by the DOA holder.

<ED Decision 2016/007/R grammar corrections>

AMC No. 2 to 21.A.263(c)(2) Privileges - Organisations designing minor changes to a type certificate (TC) or minor repairs to products : procedure for the approval of minor changes to a type certificate (TC) or minor repairs

21.A.263(c)(2)

1. Content

The procedure should address the following points:

- compliance documentation;
- approval under the DOA privilege;
- authorised signatories.

2. Compliance documentation

For those minor changes to a type certificate or minor repairs where additional work to demonstrate compliance with the applicable CS and environmental protection requirements is necessary, compliance documentation should be established and independently checked as required by 21.A.239(b).

The procedure should describe how the compliance documentation is produced and checked.

3. Approval under the DOA privilege

3.1. For those minor changes to a type certificate or minor repairs where additional work to demonstrate compliance with the applicable CS or environmental protection requirements is necessary, the procedure should define a document to formalise the approval under the DOA privilege.

This document should include at least:

1. identification and brief description of the change or the repair and reason for change or repair;
2. applicable CS or environmental protection requirements and methods of compliance;
3. reference to the compliance documents;
4. effects, if any, on limitations and on the approved documentation;
5. evidence of the independent checking function of the demonstration of compliance;
6. evidence of the approval under the privilege of 21.A.263(c)(2) by an authorised signatory;
7. date of the approval.

For repairs, see also AMC 21.A.433(a).

3.2. For the other minor changes to a type certificate or minor repairs, the procedure should define a means to identify the change or repair and reasons for the change or repair, and to formalise its approval by the appropriate engineering authority under an authorised signatory. This function should be controlled through appropriate procedures of the DOA holder's design assurance system.

4. Authorised signatories

The persons authorised to sign for the approval under the privilege of 21.A.263(c)(2) should be identified (name, signature and scope of authority) in appropriate documents that may be linked to the handbook.

<ED Decision 2016/007/R grammar corrections>

GM 21.A.263(c)(3) Issue of information or instructions

21.A.263(c)(3)

1. INTENT

This GM provides guidelines to address the various aspects the DOA should cover in order to have a comprehensive procedure for the issue of information or instructions.

2. SCOPE

The information or instructions referred to in 21.A.263(c)(3) are issued by a DOA holder to make available to the owners or operators of a product with all necessary data to implement a change on the product or a repair, or to inspect it. Some are also issued to provide maintenance organisations and other interested persons with all necessary maintenance data for the performance of maintenance, including implementation of a change on the product or a repair, or inspection, in accordance with 21.A.61, 21.A.107, 21.A.120 or 21.A.449 (Instructions for Continued Airworthiness).

This information or instructions may be issued in a format of a Service Bulletin as defined in ATA 100 system, or in Structural Repair Manuals, Maintenance Manuals, Engine and Propeller Manuals etc.
The preparation of this data involves design, production and inspection. As the overall responsibility, through the privilege, is allocated to the DOA holder, the three aspects should be properly handled under the DOA to obtain the privilege 'to issue information or instructions containing a statement that the technical content is approved', and a procedure should exist.

3. PROCEDURE

For the information and instructions issued under 21.A.263(c)(3), the DOA holder should establish a procedure addressing the following points :

- preparation
- verification of technical consistency with corresponding approved change(s) , repair(s) or approved data, including effectivity, description, effects on airworthiness and environmental protection, especially when limitations are changed
- verification of the feasibility in practical applications
- authorised signatories.

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

4. STATEMENT

The statement provided in the information or instructions should also cover the information or instructions prepared by sub-contractors or vendors and declared applicable to its products by the DOA holder.
The technical content is related to the design data and accomplishment instructions, and its approval means that:

- the design data has been appropriately approved ; and
- the instructions provide for practical and well defined installation/inspection methods, and, when accomplished, the product is in conformity with the approved design data.

Note : Information and instructions related to required actions under 21.A.3B(b) (airworthiness directives) are submitted to the Agency to ensure compatibility with Airworthiness directive content (see 21.A.265(e)), and contain a statement that they are, or will be, subject to an airworthiness directive issued by the Agency.

GM 21.A.263(c)(4) Procedure for the approval of minor revisions to the aircraft flight manual

21.A.263(c)(4)

1. INTENT

This GM provides guidelines to develop a procedure for the approval of minor revisions to the aircraft flight manual (AFM).
Each DOA applicant/holder should develop its own internal procedure, based on these guidelines, in order to obtain the associated privilege under 21.A.263(c)(4).

2. MINOR REVISIONS TO THE AFM

2.1 The following revisions to the AFM are defined as minor revisions:

(a) Revisions to the AFM associated with changes to type design classified as minor in accordance with 21.A.91

(b) Revision to the AFM not associated with changes to type design (also identified as stand-alone revisions), that falls under one of the following:

- Changes to limitations or procedures that are achieved without altering or exceeding certification data (e.g. weight, structural, noise, etc.)
- Consolidation of two or more previously approved and compatible AFMs into one, or compilation of different parts taken from previously approved and compatible AFMs that are directly applicable to the subject aircraft
- The introduction of compatible and previously approved AFM amendments, revisions, appendices or supplements.

(c) Administrative revisions to the AFM, defines as follows:

(1) FOR AFM ISSUED BY THE TYPE-CERTIFICATE HOLDER

- Editorial revisions or corrections to the AFM

- Changes to parts of the AFM that are not required to be approved by EASA
- Conversions of previously FAA or EASA approved combinations of units of measurement added to the AFM in a previously approved manner.
- The addition of aircraft serial numbers to an existing AFM where the aircraft configuration, as related to the AFM, is identical to aircraft already in that AFM.
- The removal of reference to aircraft serial numbers no longer applicable to that AFM.
- The translation of an EASA approved AFM into the language of the State of Design or the State of Registration.

(2) FOR AFM SUPPLEMENTS ISSUED BY STC HOLDERS

- Editorial revisions or corrections to the AFM supplement.
- Changes to parts of the AFM that are not required to be approved by EASA
- Conversions of previously FAA or EASA approved combinations of units of measurement added to the AFM supplement in a previously approved manner.
- The addition of aircraft serial numbers to an existing AFM supplement where the aircraft configuration, as related to the AFM supplement, is identical to aircraft already in that AFM supplement.
- The addition of a new STC to an existing AFM supplement, when this supplement is fully applicable to the new STC
- The removal of reference to aircraft serial numbers no longer applicable to that AFM supplement.
- The translation of an EASA approved AFM into the language of the State of Design or the State of Registration.

2.2 No other revision can be classified as minor, unless specifically agreed by the Agency.

3. PROCEDURE FOR THE APPROVAL OF MINOR REVISIONS TO THE AFM

3.1 Content

The procedure should address the following points:

- preparation of all revisions to the AFM,
- classification as minor of the revision to the AFM,
- approval of the revisions to the AFM,
- approval statement.

3.2 Preparation

The procedure should indicate how revisions to the AFM are prepared and how the co-ordination with people in charge of design changes is performed.

3.3 Classification

The procedure should indicate how revisions to the AFM are classified as minor, in accordance with the criteria of paragraph 2.

All decisions of classification of minor revisions to the AFM that are not straightforward must be recorded and documented. These records must be easily accessible to the

Agency for sample check.

All classifications of minor revisions to AFM must be accepted by an appropriate authorised signatory.

The procedure must indicate the authorised signatories for the various products listed in the terms of approval.

3.4 Approval

The procedure should indicate how the approval under the privilege of 21.A.263(c)(4) will be formalised.

The authorised signatories should be identified (name, signature), together with the scope of authorisation, in a document that can be linked to the DOA handbook.

3.5 Approval statement

Revisions of the AFM approved under the privilege of 21.A.263(c)(4) should be issued with the approval statement defined in 21.A.263(c)(4) on the front page and/or in the log of revisions.

AMC 21.A.263(c)(6) Procedure for the approval of the conditions for issue of a permit to fly

21.A.263(c)(6)

1. INTENT

This AMC provides means to develop a procedure to determine that an aircraft can fly, under the appropriate restrictions compensating for noncompliance with the certification specifications applicable to the aircraft category.

Each DOA applicant or holder must develop its own internal procedure following this AMC, in order to obtain the privilege to make this determination and approve associated conditions without Agency involvement, under 21.A.263(c)(6). When the privilege does not apply, the DOA holder will prepare all necessary data required for the determination in accordance with the same procedure required for the privilege, and will apply for Agency approval.

2. PROCEDURE FOR THE APPROVAL OF THE CONDITIONS FOR ISSUE OF A PERMIT TO FLY

2.1 Content

The procedure must address the following points:

- decision to use the privilege
- management of the aircraft configuration
- determination of the conditions that must be complied with to perform safely a flight
- documentation of flight conditions substantiations
- approval under the DOA privilege, when applicable
- authorised signatories.

2.2 Decision to use the privilege of 21.A.263(c)(6)

The procedure must include a decision to determine:

- flights for which the privilege of 21.A.263(c)(6) will be exercised.

2.3 Management of the aircraft configuration

The procedure must indicate:

- how the aircraft, for which an application for permit to fly is made, is identified;
- how changes to the aircraft will be managed.

2.4 Determination of the conditions that must be complied with to perform safely a flight

The procedure must describe the process used by the DOA holder to justify that an aircraft can perform the intended flight(s) safely. This process should include:

- identification of deviations from applicable certification specifications or non-compliance with Part 21 conditions for the issue of a certificate of airworthiness;
- analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight;
- the establishment of specific maintenance instructions and conditions to perform these instructions;
- independent technical verification of the analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform the intended flight(s) safely;
- statement by the office of airworthiness (or equivalent), that the determination has been made in accordance with the procedure and that the aircraft has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions;
- approval by an authorised signatory.

2.5 Documentation of flight conditions substantiations

1. The analysis, calculations, tests, or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight, must be compiled in compliance documents. These documents must be signed by the author and by the person performing the independent technical verification.
2. Each compliance document must have a number and issue date. The various issues of a document must be controlled.
3. The data submitted and approved by the type-certificate holder can be used as substantiations. In that case, the independent technical verification referred to in 2.4 is not required.

2.6 Approval under the DOA privilege

2.6.1 Initial approval

The procedure must include the following EASA Form 18A to support the approval under the DOA privilege:

FLIGHT CONDITIONS FOR A PERMIT TO FLY - APPROVAL FORM	
1.Applicant: Approval No: [Name and organisation approval number of organisation providing the flight conditions and associated substantiations]	2.Approval form No: Issue: [number and issue, for traceability purpose]
3.Aircraft manufacturer/type	4.Serial number(s)
5.Purpose [Purpose in accordance with 21.A.701(a)]	
6.Aircraft configuration The above aircraft for which a permit to fly is requested is defined in [add reference to the document(s) identifying the detailed configuration of the aircraft] [For change(s) affecting the initial approval form: description of change(s). This form must be re-issued]	
7.Substantiations [References to the document(s) justifying that the aircraft (as described in 6.) can perform the intended flight(s) safely under the defined conditions or restrictions.] [For change(s) affecting the initial approval form: reference(s) to additional substantiation(s). This form must be re-issued]	
8.Conditions/Restrictions The above aircraft must be used with the following conditions or restrictions: [Details of these conditions/restrictions, or reference to relevant document, including specific maintenance instructions and conditions to perform these instructions]	
9.Statement The determination of the flight conditions has been made in accordance with the relevant DOA procedure agreed by the Agency. The aircraft as defined in block 6 above has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions.	
[strikethrough what is not applicable] 10a.Approved under the authority of DOA EASA.21J.xyz [when privilege of 21.A.263(c)(6) applies] 10b.Submitted under the authority of DOA EASA.21J. xyz [when privilege of 21.A.263(c)(6) does not apply]	
11.Date of issue	12.Name and signature [Authorised signatory]
13.EASA approval and date [when privilege of 21.A.263(c)(6) does not apply]	

EASA Form 18A Issue 3

When the privilege of 21.A.263(c)(6) is not applicable, the signed form should be presented by the office of airworthiness (or equivalent) to the Agency.

2.6. Approval of changes

Except for changes that do not affect the conditions approved for the issue of the permit to fly, the procedure must specify how changes will be approved by the DOA Holder. The EASA Form 18A must be updated.

2. Authorised signatories

The person(s) authorised to sign the approval form must be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the DOA handbook.

AMC 21.A.263(c)(7) Procedure for the issue of a permit to fly

21.A.263(c)(7)

1. INTENT

This acceptable means of compliance provides means to develop a procedure for the issue of a permit to fly. Each DOA applicant or holder must develop its own internal procedure following this AMC, in order to obtain the privilege of 21.A.263(c)(7) to issue permits to fly for aircraft it has designed or modified, or for which it has approved under 21.A.263(c)(6) the conditions under which the permit to fly can be issued, and when the design organisation itself is controlling under its DOA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight.

2. PROCEDURE FOR THE ISSUE OF A PERMIT TO FLY

2.1 Content

The procedure must address the following points:

- conformity with approved conditions;
- issue of the permit to fly under the DOA privilege;
- authorised signatories;
- interface with the local authority for the flight.

2.2 Conformity with approved conditions

The procedure must indicate how conformity with approved conditions is made, documented and attested by an authorised person.

2.3 Issue of the permit to fly under the DOA privilege

The procedure must describe the process to prepare the EASA Form 20b and how compliance with 21.A.711(b) and (e) is established before signature of the permit to fly.

2.4 Authorised signatories

The person(s) authorised to sign the permit to fly under the privilege of 21.A.263(c)(7) must be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the DOA handbook.

2.5 Interface with the local authority for the flight

The procedure must include provisions describing the communication with the local authority for compliance with the local requirements which are outside the scope of the conditions of 21.A.708(b) (see 21.A.711(e)).

AMC 21.A. 265(a) Administration of the Handbook

21.A.265(a)

1. The handbook of the applicant must be in the language which will permit the best use of it by all personnel charged with the tasks performed for the purpose of the design organisation. The applicant may be requested to provide an English translation of the handbook and other supporting documents as necessary for the investigation.
2. The handbook must be produced in a concise form with sufficient information to meet 21.A.243 relevant to the scope of approval sought by the applicant. The handbook must include the following:
   a. Organisation name, address, telephone, telex and facsimile numbers.
   b. Document title, and company document reference No (if any).
   c. Amendment or revision standard identification for the document.
   d. Amendment or revision record sheet.
   e. List of effective pages with revision/date/amendment identification for each page.
   f. Contents list or index.
   g. A distribution list for the Handbook.
   h. An introduction, or foreword, explaining the purpose of the document for the guidance of the organisation's own personnel. Brief general information concerning the history and development of the organisation and, if appropriate, relationships with other organisations which may form part of a group or consortium, must be included to provide background information for the Agency.
   i. The certificate of approval must be reproduced in the document.
   j. Identification of the department responsible for administration of the Handbook.

Note: In the case of an initial or revised approval it is recognised that certificate will be issued after EASA agreement to the handbook content in draft form. Arrangements for formal publication in a timely manner must be agreed before the certificate of approval is issued.

3. An updating system must be clearly laid down for carrying out required amendments and modifications to the handbook.
4. The handbook may be completely or partially integrated into the company organisation manual. In this case, identification of the information required by 21.A.243 must be provided by giving appropriate cross-references, and these documents must be made available, on request, to the Agency.

AMC-ELA No 1 to 21.A.265(a) Obligations of the holder — Administration of the design organisation handbook

21.A.265(a)

The design organisation handbook (DOH) of the applicant should be in a language that will permit the best use of it by all the personnel who perform tasks for the design organisation. The DOH may be completely or partially integrated into the company's organisation manual. Refer also to AMC-ELA No 1 to 21.A.243 for the required content.

AMC-ELA No 1 to 21.A.265(b) Obligations of the holder — Use of the design organisation handbook as a basic working document

21.A.265(b)

It is the responsibility of the HDO to ensure that the design organisation handbook (DOH) is used as a basic working document within the design organisation. In this sense, the HDO should include a statement to the DOH that the information provided within the DOH is binding.

The organisation should ensure that personnel have access to, and are familiar with, that part of the content of the DOH that covers their activities. This may be done, for example, by distributing the information that updates of the documentation are available, and by making the documentation available at a location where the information is accessible to all affected persons.

Staff at the design organisation who are involved in the demonstration of compliance of products under the DOA approval should be able to demonstrate their awareness of the definitions provided within the DOH. This can be achieved by any suitable means, and it does not necessarily require training sessions to be provided. Regular internal monitoring should be conducted to verify that the relevant staff members are aware of the relevant definitions.

Monitoring of compliance with this documentation should be done by systematic means. These means do not need to be limited to, or to even include auditing, but they can be accomplished by structured experience exchanges, regular quality meetings, brainstorming or lessons-learned sessions, project reviews at appropriate phases of the product development, or other similar means accepted by EASA.

GM 21.A.265(b) Use of the Handbook

21.A.265(b)

1. The handbook should be signed by the Chief Executive and the Head of the design organisation and declared as a binding instruction for all personnel charged with the development and type investigation of products.
2. All procedures referenced in the handbook are considered as parts of the handbook and therefore as basic working documents.

AMC-ELA No 1 to 21.A.265(c) Obligations of the holder — Determination of compliance

21.A.265(c)

The organisation should apply the methods detailed in AMC-ELA No 2 to 21.A.239(a) to determine whether the design of the product, or changes or repairs to them, comply with the applicable requirements, and to ensure that the design of the product contains no unsafe features.

AMC-ELA No 1 to 21.A.265(e) Obligations of the holder — Providing information in response to airworthiness directives

21.A.265(e)

The design organisation handbook (DOH) should contain a declaration to ensure that the proposal of appropriate corrective actions/required inspections is submitted to EASA in cases where EASA has issued airworthiness directives in response to potentially unsafe conditions of a product under the responsibility of the approved DO. In addition, the provisions in the DOH should ensure that following the approval by EASA of any proposals referred to under this point, the DO makes appropriate descriptions and procedures for the corrective actions/required inspections available to all known operators or owners of the product and, upon request, to any person that is required to comply with the airworthiness directive.

Subpart K - Parts and appliances

AMC 21.A.303(c) Standard Parts

21.A.303(c)

1. In this context a part is considered as a 'standard part' where it is designated as such by the design approval holder responsible for the product, part or appliance, 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
2. For sailplanes and powered sailplanes, where it is a non-required instrument and/or equipment certified under the provision of 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 above means required by the applicable certification specifications (CS 22.1303, 22.1305 and 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 to the certification specifications shall comply with the applicable ETSO or equivalent and is not considered a standard part (e.g. oxygen equipment).

GM No. 2 to 21.A.303(c) Officially recognised Standards

21.A.303(c)

In this context 'officially recognised Standards' means:

1. 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.
2. The standard used by the manufacturer of the equipment as mentioned in paragraph 2 of AMC 21.A.303(c).

Subpart M - Repairs

GM 21.A.431(a) Scope

21.A.431(a)

Manuals and other instructions for continued airworthiness (such as the Manufacturers Structural Repair Manual, Maintenance Manuals and Engine Manuals provided by the holder of the type - certificate, supplemental type-certificate, or APU ETSO authorisation as applicable) for operators, contain useful information for the development and approval of repairs. When these data are explicitly identified as approved, they may be used by operators without further approval to cope with anticipated in-service problems arising from normal usage provided that they are used strictly for the purpose for which they have been developed. Approved data is data which is approved either by the Agency, or by an appropriately approved design organisation.

NB: Flow Chart 1 addresses the procedures that should be followed for products where the State of design is a Member State

Flow Chart 2 addresses procedures that should be followed for products where the State of design is not a Member State.

When specific repair data is approved outside of the Community, conditions for acceptance may be defined in the bilateral arrangements between the Community and the competent authority of a third country. In the absence of such arrangement, the repair data shall follow the approval route as if it was designed and approved within the Community.

GM 21.A.431(d) Repairs to ETSO articles other than an APU

21.A.431(a)

A repair to an ETSO article other than an APU can be either be seen:

1. Under 21.A.611 in the context of an ETSO authorisation, i.e., when an article as such is specifically approved under Subpart O, with dedicated rules that give specific rights and obligations to the designer of the article, irrespective of any product type design or change to the type design. For a repair to such an article, irrespective of installation on any aircraft, Subpart O, and 21.A.611 in particular, should be followed; or
2. When an airline or a maintenance organisation is designing a new repair (based on data not published in the TC holder or Original Equipment Manufacturer documentation) on an article installed on an aircraft, such a repair can be considered as a repair to the product in which the article is installed, not to the article taken in isolation. Therefore Subpart M can be used for the approval of this repair, that will be identified as 'repair to product x affecting article y', but not 'repair to article y'.

GM 21.A.431B Standard repairs — Certification Specifications

21.A.431B

CS-STAN contains the certification specifications referred to in 21.A.431B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in AMC M.A.801 of the AMC to Part-M.

<ED Decision 2015/016/R new GM>

AMC 21.A.433 (a) and 21.A.447 Repair design and record keeping

21.A.433 (a)
21.A.447

1. Relevant substantiation data associated with a new major repair design and record keeping should include:
   a. damage identification and reporting source,
   b. major repair design approval sheet identifying applicable specifications and references of justifications,
   c. repair drawing and/or instructions and scheme identifier,
   d. correspondence with the TC, STC, or APU ETSO authorisation holder, if its advice on the design has been sought,
   e. structural justification (static strength, fatigue, damage tolerance, flutter etc .) or references to this data,
   f.e ffect on the aircraft, engines and/or systems, (performance, flight handling, etc ., as appropriate)
   g. effect on maintenance programme,
   h. effect on Airworthiness limitations, the Flight Manual and the Operating Manual,
   i. weight and moment change,

j. special test requirements.

2. Relevant minor repair documentation includes paragraphs 1(a) and (c). Other points of paragraph 1 may be included where necessary. If the repair is outside the approved data, justification for classification is required.
3. Special consideration should be given to repairs that impose subsequent limitations on the part, product or appliance, (e.g., engine turbine segments that may only be repaired a finite number of times, number of repaired turbine blades per set, oversizing of fastener holes, etc.).
4. Special consideration should also be given to Life Limited parts and Critical Parts, notably with the involvement of the type-certificate or STC holder, when deemed necessary under 21.A.433 (b).
5. Repairs to engine or APU critical parts would normally only be accepted with the involvement of the TC holder.

GM 21.A.435(a) Classification of repairs

21.A.435 (a)

1. Clarification of the terms Major/Minor
In line with the definitions given in 21.A.91, 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 or other characteristics affecting the airworthiness of the product, part or appliance. In particular, a repair is classified as major if it needs extensive static, fatigue and damage tolerance strength justification and/or testing in its own right, or if it needs methods, techniques or practices that are unusual (i.e., unusual material selection, heat treatment, material processes, jigging diagrams, etc.) Repairs that require a re-assessment and re-evaluation of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements, are to be considered as 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 still complies with all the relevant requirements, are to 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 re-classified, owing to early judgements being no longer valid.
2. Airworthiness concerns for Major/Minor classification
The following should be considered for the significance of their effect when classifying repairs. Should the effect be considered to be significant then the repair should be classified 'Major'. The repair may be classified as 'Minor' where the effect is known to be without appreciable consequence.
   i) Structural performance
   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.
   ii) 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.
   iii) 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 area of a static port).
   iv) Operational characteristics
   Changes may include:
   - - stall characteristics
   - - handling
   - - performance and drag
   - - vibration

v) Other characteristics
- - changes to load path and load sharing
- - change to noise and emissions
- - fire protection / resistance

Note: Considerations for classifying repairs 'Major/Minor' should not be limited to those listed above.

3. Examples of 'Major' repairs
   i) 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 classification as 'Major' of the associated repair.
   ii) A repair to life limited or critical parts.
   iii) A repair that introduces a change to the Aircraft Flight Manual.

GM 21.A.437 Issue of repair design approval

21.A.437

1) Approval by DOA holder
Approval of repairs through the use of procedures agreed with the Agency, means an approval issued by the DOA holder without requiring Agency involvement. The Agency will monitor 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 under their DOA privilege.

2) Previously approved data for other applications
When it is intended to use previously approved data for other applications, it is expected that applicability and effectiveness would be checked with an appropriately approved design organisation. 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 previous approved repair design, (structural justifications still valid, possible airworthiness limitations unchanged), the solution can be considered approved and can be used again.

3) Temporary repairs.
These are repairs that are life limited, to be removed and replaced by a permanent repair after a limited service period. These repairs should be classified under 21.A.435 and the service period defined at the approval of the repair.

4) Fatigue and damage tolerance.
When the repaired product is released into service before the fatigue and damage tolerance evaluation has been completed, the release should be for a limited service period, defined at the issue of the repair.

GM 21.A.437(a) Issue of repair design approval

21.A.437(a)

1) Products first type-certificated by the Agency or first type-certificated by a Member State (covering products type-certificated through JAA procedures or under national regulations and products certificated nationally without a type-certificate).
   i) Agency approval is required in cases of major repairs proposed by design organisation approval holders, not being the TC, STC or APU ETSO authorisation holder, and in cases of minor repairs proposed by persons not holding a design organisation approval.
   ii) Agency approval may be required in cases of major repairs proposed by design organisation approval holders, being the TC, STC or APU ETSO authorisation holder, if the major repair is:
   - related to new interpretation of the certification specification as used for type certification.
   - related to different means of compliance from that used for type certification.
   - related to the application of certification specification different from that used for type certification.

Note: This should be established at the time of DOA approval.

2) Products first type-certificated by the competent authority of a third country.
Agency approval is always required for major repairs on products first type-certificated by the competent authority of a third country. Approval privileges extended to TC holders (noted in 21.A.437(b) are not extended

to TC holders of products first type-certificated by the competent authority of a third country. Type-certificate holders of those types may need to be involved when an arrangement with the TC holder has been determined necessary under 21.A.433(b).
For repairs approved outside of the Community conditions for acceptance may be defined in the bilateral arrangement between the Community and the competent authority of a third country. In the absence of such arrangement, the repair data shall follow the approval route as if it was designed and approved within the EU.

AMC 21.A.437(b) Issue of repair design approval

21.A.437(b)

In order for the approved design organisation that is also the type-certificate, supplemental type-certificate or APU ETSO authorisation holder to approve 'Major' repair design the following should be considered applicable:

i) The type-certificate, supplemental type-certificate or APU ETSO authorisation holder being approved under Part 21 Subpart J.

ii) Procedures having been established that comply with Part 21 Subpart M as agreed with the Agency.

iii) The type-certification basis for the product, part or appliance to be repaired having been identified together with all other relevant requirements.

iv) All records and substantiation data including documents demonstrating compliance with all relevant certification specifications being held for reviews by the Agency.

v) A summary list of all major repair approvals being provided to the Agency on a regular basis as agreed with the Agency.

vi) Whether the repair design is affected by the presence of any supplemental type-certificate.

GM 21.A.439 Production of repair parts

21.A.439

A maintenance body, (organisation or person), may manufacture parts for repair purposes when in accordance with Subpart F or when approved under Subpart G of Part 21. In addition, a maintenance organisation may manufacture parts for its own repair purposes when expressly authorised by the competent authority of the Member State in accordance with the applicable implementing rules.

GM 21.A.441 Repair Embodiment

21.A.441

Repairs should be accomplished by an organisation or person in accordance with the relevant implementing rules.
The holder of a production organisation approval under Subpart G of Part 21 may accomplish repairs to new aircraft, within its terms of approval, under the privilege of 21.A.163(d).

GM 21.A.443 Limitations

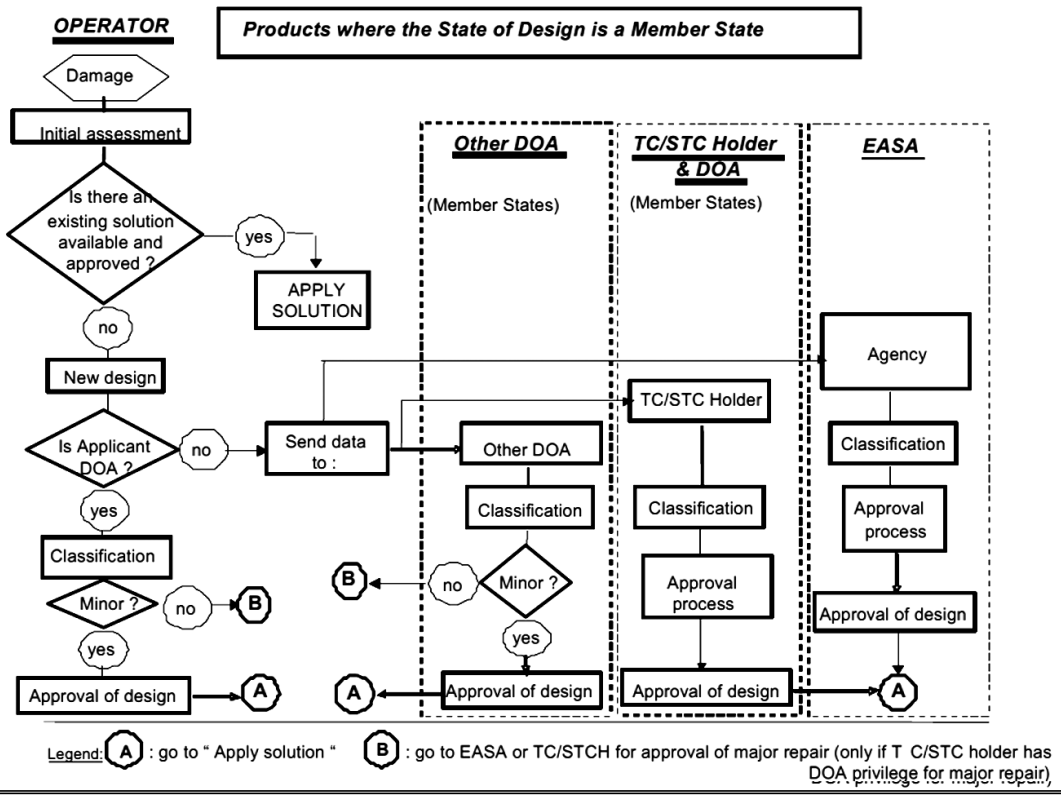
21.A.443

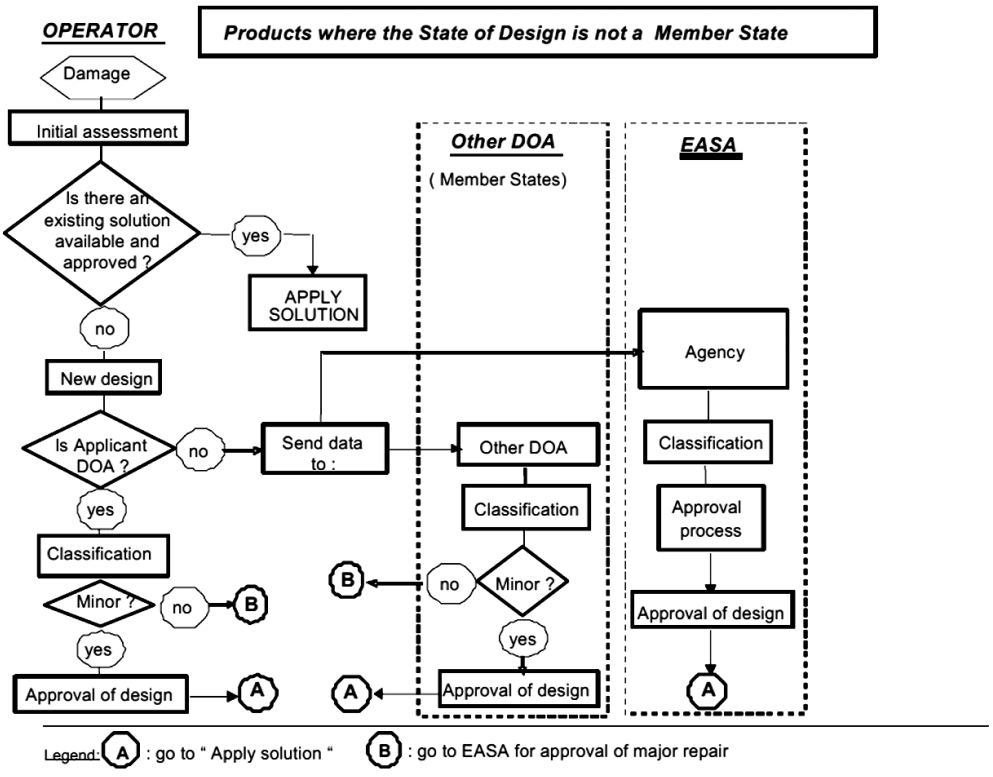
Instructions and limitations associated with repairs should be specified and controlled by those procedures required by the applicable operations rules.

GM 21.A.445 Unrepaired damage

21.A.445

This 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 O - European Technical Standard Order Authorisations

AMC 21.A.602B(b)(2) Procedures for ETSO authorisations

21.A.602B(b)(2)

1. Scope
   1.1 A manual of procedures must set out specific design practices, resources and sequence of activities relevant for the specific projects, taking account of Part 21 requirements.
   1.2 These procedures must be concise and limited to the information needed for quality and proper control of activities by the applicant/holder, and by the Agency.
2. Management of the ETSO authorisation process
   A procedure explaining how the application to the Agency and certification process to obtain an ETSOA will be made, must be established.
3. Management of design changes
   3.1 A procedure taking into account 21.A.611, must be established for the classification and approval of design changes on articles under ETSO authorisation
   3.2 Procedure for the classification and approval of repairs and unintentional deviations from the approved design data occurring in production (concessions or non-conformance's) must be established.
4. Obligations addressed in 21.A.609
   The applicant should establish the necessary procedures to show to the Agency how it will fulfil the obligations under 21.A.609.
   For issue of information and instructions, a procedure following the principles of AMC 21.A.14(b), paragraph 4 must be established.
5. Control of design sub-contractors
   The applicant must establish the necessary procedures to show to the Agency how it will control design sub-contractors.

AMC 21.A.608 Declaration of Design and Performance

21.A.608

STANDARD FORM

DDP No. .....

ISSUE No. .....

1. Name and address of manufacturer.
2. Description and identification of article including:
   Type No .....
   Modification Standard
   Master drawing record
   Weight and overall dimensions
3. Specification reference, i.e., ETSO No. and Manufacturer's design specification.
4. The rated performance of the article directly or by reference to other documents.
5. Particulars of approvals held for the equipment.
6. Reference to qualification test report.
7. Service and Instruction Manual reference number.
8. Statement of compliance with the appropriate ETSO and any deviations therefrom.
9. A statement of the level of compliance with the ETSO in respect of the ability of the article to withstand various ambient conditions or to exhibit various properties.

The following are examples of information to be given under this heading depending on the nature of the article and the specifications of the ETSO.

(a) Environmental Qualification
   i. Temperature and Altitude
   ii. Temperature Variation

iii. Humidity
iv. Operational Shocks and Crash Safety
v Vibration
vi.Explosion Proofness
vii.Waterproofness
viii.Fluids Susceptibility
ix. Sand and Dust
x. Fungus Resistance
xi.Salt Spray
xii.Magnetic Effect
xiii.Power Input
xiv. Voltage Spike
xv. Audio Frequency Conducted Susceptibility - Power Inputs
xvi.Induced Signal Susceptibility
xvii.Radio Frequency Susceptibility (Radiated and Conducted)
xviii.Emission of Radio Frequency Energy
xix. Lightning Induced Transient Susceptibility
xx. Lightning Direct Effects
xxi.Icing
xxii.Electrostatic Discharge
xxiii.Fire, Flammability

(Note: The manufacturer should list environmental categories for each of the sections of the issue of EUROCAE ED-14/ RTCA DO-160 that was used to qualify the article.)

(b) For radio transmitters the transmitting frequency band, maximum transmitting power, and emission designator.

(c) Working and ultimate pressure or loads.

(d) Time rating (e.g., continuous, intermittent) or duty cycle.

(e) Limits of accuracy of measuring instruments.

(f) Any other known limitations which may limit the application in the aircraft e.g., restrictions in mounting attitude.

10. A statement of the software level(s) used or 'None' if not applicable.

(Note: Software levels (software development assurance levels (DAL)) are those defined in the industry document referred in the latest edition of AMC 20-115)

11. A statement of design assurance level for complex hardware or a statement indicating whether complex hardware is embedded or not in the product.

(Note: Complex hardware design assurance levels are those defined in the applicable issue of EUROCAE ED-80/RTCA DO-254.)

12.The declaration in this document is made under the authority of

……(name of manufacturer)

(Manufacturer's name) cannot accept responsibility for equipment used outside the limiting conditions stated above without their agreement.

Date: ……Signed……..(Manufacturer's authorised representative)

GM to 21.A.611 Design changes

21.A.611

A change to an ETSO article can either be seen:

- under this 21.A.611 in the context of an ETSO authorisation, i.e., when an article as such is specifically approved under Subpart O, with dedicated rules that give specific rights and obligations to the designer of the article, irrespective of any product type design or change to the type design. For a change to such an article, irrespective of installation on any aircraft, Subpart O, and this 21.A.611 in particular, should be followed; or

- when an airline or a maintenance organisation is designing a change (based on data not published in the TC holder or Original Equipment Manufacturer documentation) on an article installed on an aircraft, such a change can be considered as a change to the product in which the article is installed, not to the article taken in isolation. Therefore Subpart D can be used for the approval of this change that will be identified as 'change to product x affecting article y', but not 'change to article y'.

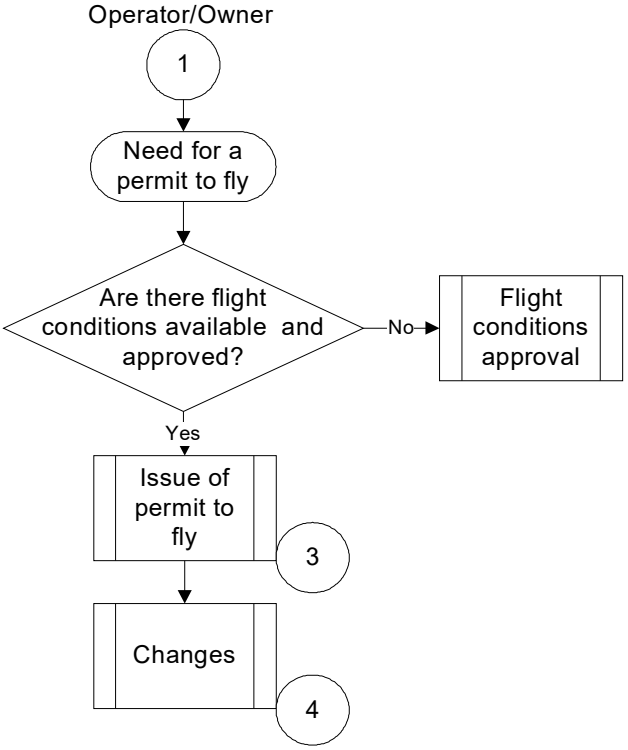
Subpart P - Permit to Fly

GM to Subpart P

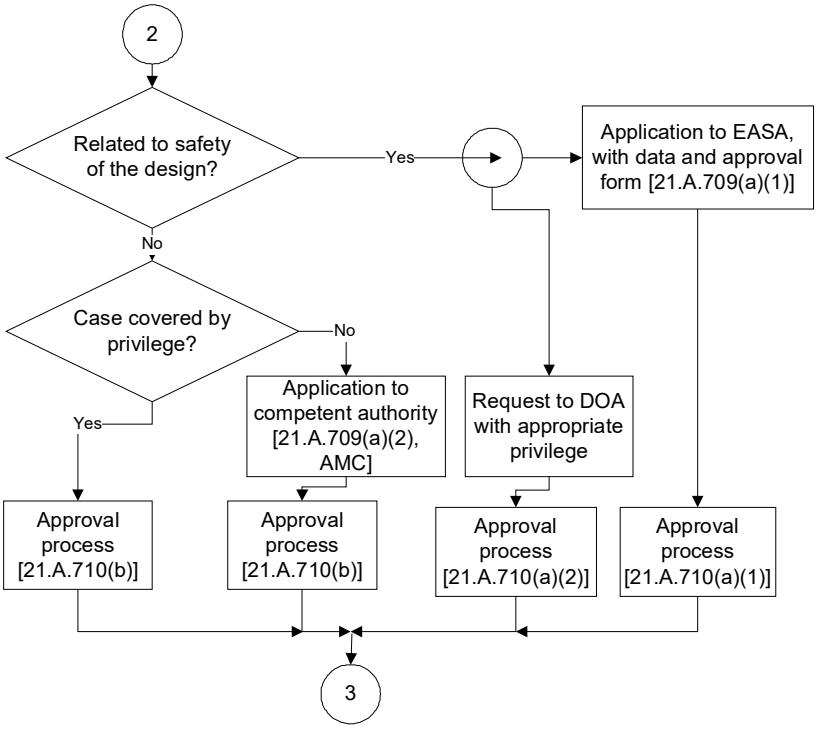
The process allowing a flight under a permit to fly can be described as follows:

1. Flow-chart 1: overview
2. Flow-chart 2: approval of flight conditions
3. Flow-chart 3: issue of permit to fly
4. Flow-chart 4: changes after first issue of permit to fly

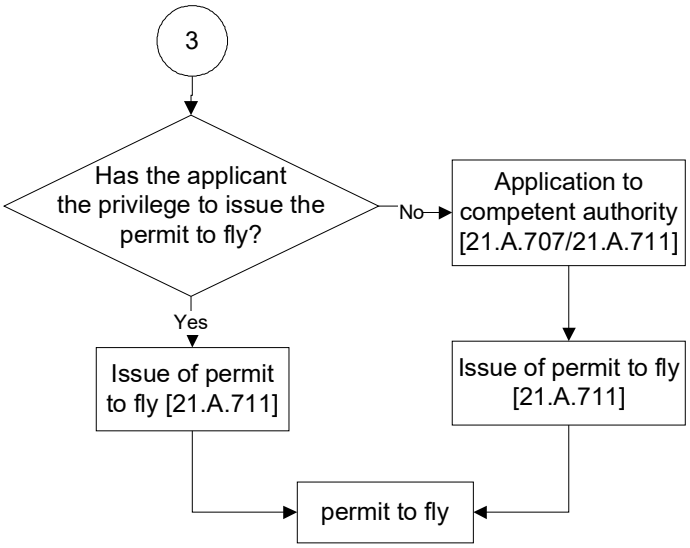
Flow-chart 1: overview



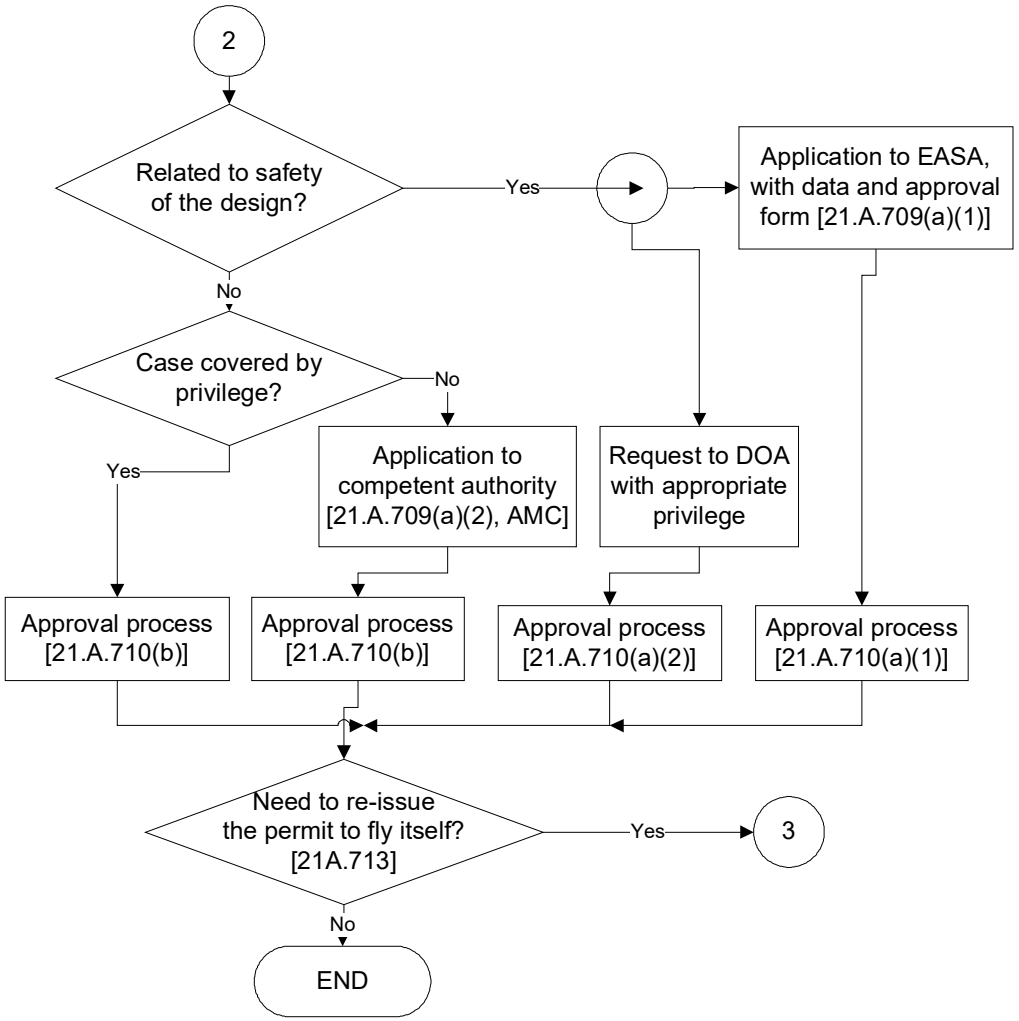
Flow-chart 2: approval of flight conditions



Flow-chart 3: issue of permit to fly



Flow-chart 4: changes after first issue of permit to fly



GM 21.A.701(a) Permit to fly when certificate of airworthiness or restricted certificate of airworthiness is not appropriate

21.A.701(a)

A certificate of airworthiness or restricted category certificate of airworthiness may not be appropriate for an individual aircraft or aircraft type when it is not practicable to comply with the normal continued airworthiness requirements and the aircraft is to a design standard that is demonstrated to be capable of safe flight under defined conditions. Point 21.A.701 identifies cases where the issuance of a (restricted) certificate of airworthiness may not be possible or appropriate and this GM provides further information and typical examples for clarification where appropriate: -

Note: This list of examples is not exhaustive

(1) Development:
- testing of new aircraft or modifications
- testing of new concepts of airframe, engine, propeller and equipment;
- testing of new operating techniques;

(2) Demonstration of compliance with regulations or certification specifications:
- certification flight testing for type certification, supplemental type certificates, changes to type certificates or ETSO authorisation;

(3) Design organisations or production organisations crew training:
- Flights for training of crew that will perform design or production flight testing before the design approval or Certificate of Airworthiness (C of A) can be issued.

(4) Production flight testing of new production aircraft:
- For establishing conformity with the approved design, typically this would be the same program for a number of similar aircraft;

(5) Flying aircraft under production between production facilities:
- green aircraft ferry for follow on final production.

(6) Flying the aircraft for customer acceptance:
- Before the aircraft is sold and/or registered.

(7) Delivering or exporting the aircraft:
- Before the aircraft is registered in the State where the C of A will be issued.

(8) Flying the aircraft for Authority acceptance:
- In the case of inspection flight test by the authority before the C of A is issued.

(9) Market survey, including customer's crew training:
- Flights for the purpose of conducting market survey, sales demonstrations and customer crew training with non type-certificated aircraft or aircraft for which conformity has not yet been established or for non-registered a/c and before the Certificate of Airworthiness is issued.

(10) Exhibition and air show:
- Flying the aircraft to an exhibition or show and participating to the exhibition or show before the design approval is issued or before conformity with the approved design has been shown.

(11) Flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage:
- Ferry flights in cases where maintenance is not performed in accordance with approved programmes, where an AD has not been complied with where certain equipment outside the Master Minimum Equipment List (MMEL) is unserviceable or when the aircraft has sustained damage beyond the applicable limits.

(12) Flying an aircraft at a weight in excess of its maximum certificated take-off weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available:
- Oversees ferry flights with additional fuel capacity.

(13) Record breaking, air racing or similar competition:
- Training flight and positioning flight for this purpose are included

(14) Flying aircraft meeting the applicable certification specifications before conformity to the environmental requirements has been found:

- Flying an aircraft which has been demonstrated to comply with all applicable certification specifications but not with environmental requirements.

(15) For non-commercial flying activity on individual non-complex aircraft or types for which a certificate of airworthiness or restricted certificate of airworthiness is not appropriate.

- For aircraft which cannot practically meet all applicable certification specifications, such as certain aircraft without TC-holder ('generically termed orphan aircraft') or aircraft which have been under national systems of Permit to Fly and have not been demonstrated to meet all applicable requirements. The option of a permit to fly for such an aircraft should only be used if a certificate of airworthiness or restricted certificate of airworthiness cannot be issued due to conditions which our outside the direct control of the aircraft owner, such as the absence of properly certified spare parts.

Note: The above listing is of cases when a permit to fly MAY be issued; it does not mean that in the described cases a permit to fly MUST be issued. If other legal means are available to allow the intended flight(s) they can also be used.

GM 21.A.701 Scope

21.A.701

An aircraft registered outside the Member States and used for flight testing by an organisation which has its principle place of business in a Member State, remains under the authority of its state of registry. The Agency or an appropriately approved design organisation can provide, on request, technical assistance to the state of registry for the issue of a permit to fly, or equivalent authorisation, under the state of registry applicable regulations.

GM 21.A.703 Applicant for a permit to fly

21.A.703

1. The applicant for a permit to fly may be a person other than the registered owner of the aircraft. As the holder of this permit will be responsible for ensuring that all the conditions and limitations associated with the permit to fly are continuously satisfied, the applicant for the permit should be a person or organisation suitable for assuming these responsibilities. In particular, the organisations designing, modifying or maintaining the aircraft should normally be the holder of the associated permits to fly.

2 .An appropriately approved design organisation can apply for the approval of the flight conditions when using its privilege in accordance with 21.A.263(b)(1).

GM 21.A.705 Competent authority

21.A.705

An aircraft registered in a Member State is under the responsibility of this Member State for continuing airworthiness aspects. Consequently, any permit to fly under Part 21 should be issued by that Member State including cases where the aircraft will fly in another State. The permit to fly contains all the conditions and restrictions to ensure safe flight but other airspace and operational rules remain the competence of the authority of the State where the flight will take place. The applicant should therefore also ensure compliance with the relevant regulations of that State.

GM 21.A.707(b) Application

21.A.707(b)

EASA Form 21 (see AMC 21.B.520(b)) should be obtained from the competent authority.

GM 21.A.708(b)(6) Continuing airworthiness

21.A.708(b)(6)

In most cases a simple reference to existing maintenance requirements will suffice for aircraft that have a temporarily invalid C of A.

For other aircraft it will have to be proposed by the applicant as part of the flight conditions. For approved organisations they can be included in their procedures.

GM No. 1 to 21.A.708(c) Safe flight

21.A.708(c)

Safe flight normally means continued safe flight and landing but in some limited cases (e.g. higher risk flight testing) it can mean that the aircraft is able to fly in a manner that will primarily ensure the safety of overflown third parties, the flight crew and, if applicable other occupants.

This definition of 'safe flight' should not be interpreted as allowing a test pilot, equipped with a parachute and operating over a sparsely populated area, to set out on a test flight in the full knowledge that there is a high probability of losing the aircraft. The applicant should take reasonable care to minimise safety risks and to be satisfied that there is a reasonable probability that the aircraft will carry out the flight without damage or injury to the aircraft and its occupants or to other property or persons whether in the air or on the ground.

GM No. 2 to 21.A.708(c) Substantiations

21.A.708(c)

The substantiations should include analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight.

GM No. 3 to 21.A.708(c) Operation of Overweight Aircraft

21.A.708(c)

This GM provides information and guidance with respect to permit to fly for operating an aircraft in excess of its maximum certificated take-off weight, for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available.

1. GENERAL.
   The excess weight that may be authorized for overweight operations should be limited to additional fuel, fuel carrying facilities, and navigational equipment necessary for the flight. It is recommended that the applicant discuss the proposed flight with the TC holder of the aircraft to determine the availability of technical data on the installation of additional fuel carrying facilities and/or navigational equipment.
2. CRITERIA USED TO DETERMINE THE SAFETY OF ADDITIONAL FACILITIES.
   In evaluating the installation of additional facilities, the Agency or the design organisation must find that the changed aircraft is safe for operation. To assist in arriving at such a determination, the following questions are normally considered:
   a. Does the technical data include installation drawings, structural substantiating reports, weight, balance, new centre of gravity limits computations, and aircraft performance limitations in sufficient detail to allow a conformity inspection of the aircraft to be made?
   b. In what ways does the aircraft not comply with the applicable certification specifications?
   c. Are the fuel tanks vented to the outside? Are all areas in which tanks are located ventilated to reduce fire, explosion, and toxicity hazards?
   d. Are the tanks even when empty strong enough to withstand the differential pressure at maximum operating altitude for a pressurized aircraft?
   e. Have means been provided for determining the fuel quantity in each tank prior to flight?
   f. Are shutoff valves, accessible to the pilot, provided for each additional tank to disconnect these tanks from the main fuel system?
   g. Are the additional fuel tank filler connections designed to prevent spillage within the aircraft during servicing?
   h. Is the engine oil supply and cooling adequate for the extended weight and range?
3. LIMITATIONS.
   The following types of limitations may be necessary for safe operation of the aircraft:
   a. Revised operational airspeeds for use in the overweight condition.
   b. Increased pilot skill requirements.
   c. A prescribed sequence for using fuel from various tanks as necessary to keep the aircraft within its centre of gravity range.
   d. Notification to the control tower of the overweight take-off condition to permit use of a runway to minimize flight over congested areas.

e. Avoidance of severe turbulence. If encountered, the aircraft should be inspected for damage as soon as possible.

EXAMPLE of operating limitations which may be prescribed as part of the permit to fly:

Aircraft type: xxxxxx Model: yyyy

Limitations:

1. Maximum weight must not exceed 8 150 pounds.
2. Maximum quantity of fuel carried in auxiliary tanks must not exceed 106 gallons in fwd tank, 164 gallons in centre tank, and 45 gallons in aft tank.
3. Centre of gravity limits must not exceed (fwd) +116.8 and (aft) +124.6.
4. Aerobatics are prohibited.
5. Use of autopilot while in overweight condition is prohibited.
6. Weather conditions with moderate to severe turbulence should be avoided.
7. When an overweight landing is made or the aircraft has been flown through moderate or severe turbulence while in an overweight condition, the aircraft must be inspected for damage after landing. The inspections performed and the findings must be entered in the aircraft log. The pilot must determine, before the next take-off, that the aircraft is airworthy.
8. When operated in the overweight condition, the cruising speed (Vc) shall not exceed 185 m.p.h. and the maximum speed (Vne) shall not exceed 205 m.p.h.
9. Operation in the overweight condition must be conducted to avoid areas having heavy air traffic, to avoid cities, towns, villages, and congested areas, or any other areas where such flights might create hazardous exposure to person or property on the ground.

GM 21.A.708(d) Control of aircraft configuration

21.A.708(d)

The applicant should establish a method for the control of any change or repair made to the aircraft, for changes and repairs that do not invalidate the conditions established for the permit to fly. All other changes should be approved in accordance with 21.A.713 and when necessary a new permit to fly should be issued in accordance with 21.A.711.

AMC 21.A.709(b) Submission of documentation supporting the establishment of flight conditions

21.A.709(b)

Together with the application, the documentation required by 21.A.709(b) must be submitted with the approval form (EASA Form 18B) defined below, completed with all relevant information. If the complete set of data is not available at the time of application, the missing elements can be provided later. In such cases, the approval form must be provided only when all data are available, to allow the applicant to make the statement required in box 9 of the form.

FLIGHT CONDITIONS FOR A PERMIT TO FLY - APPROVAL FORM	
1.Applicant [Name of organisation providing the flight conditions and associated substantiations]	2.Approval form No: Issue: [Number and issue, for traceability purpose]
3.Aircraft manufacturer/type	4.Serial number(s)
5.Purpose [Purpose in accordance with 21.A.701(a)]	
6.Aircraft configuration The above aircraft for which a permit to fly is requested is defined in [add reference to the document(s) identifying the configuration of the aircraft] [For change(s) affecting the initial approval form: description of change(s). This form must be re-issued]	

7.Substantiations [References to the document(s) justifying that the aircraft (as described in 6.) can perform the intended flight(s) safely under the defined conditions or restrictions.] [For change(s) affecting the initial approval form: reference(s) to additional substantiation(s). This form must be re-issued]	
8.Conditions/Restrictions The above aircraft must be used with the following conditions or restrictions: [Details of these conditions/restrictions, or reference to relevant document, including specific maintenance instructions and conditions to perform these instructions]	
9.Statement The flight conditions have been established and justified in accordance with 21.A.708. The aircraft as defined in block 6 above has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions.	
[when approved under a privilege of an approved organisation] 10.Approved under [ORGANISATION APPROVAL NUMBER]'	
11.Date of issue	12.Name and signature [Authorised signatory]
[when not approved under a privilege of an approved organisation] 13.Approval and date [the appropriate approval: EASA, competent authority]	

EASA Form 18B Issue 3

When the flight conditions are approved under a privilege, this form should be used by the approved organisation to document the approval.

GM 21.A.710 Approval of flight conditions

21.A.710

1.The approval of flight conditions is related to the safety of the design, when:

a. the aircraft does not conform to an approved design; or
b. an Airworthiness Limitation, a Certification Maintenance Requirement or an Airworthiness Directive has not been complied with; or
c. the intended flight(s) are outside the approved envelope;
d. the permit to fly is issued for the purpose of 21.A.701(a)(15).

2.Examples when the approval of flight conditions is not related to the safety of the design are:

a. production flight testing for the purpose of conformity establishment;
b. delivery / export flight of a new aircraft the design of which is approved;
c. demonstrating continuing conformity with the standard previously accepted by the Agency for the aircraft or type of aircraft to qualify or re-qualify for a (restricted) certificate of airworthiness.

GM 21.A.711(e) Additional conditions and restrictions

21.A.711(e)

The conditions and restrictions prescribed by the competent authority may include airspace restrictions to make the conditions approved under 21.A.710 more concrete, or conditions outside the scope of the ones mentioned in 21.A.708(b) such as a radio station license.

GM 21.A.713 Changes

21.A.713

Changes to the conditions or associated substantiations that are approved but do not affect the text on the permit to fly do not require issuance of a new permit to fly. In case a new application is necessary, the substantiation for approval of the flight conditions only needs to address the change.

GM 21.A.719 Transfer of a permit to fly

21.A.719

Except for permits to fly issued under 21.A.701(a)(15), like aircraft without TC holder, a permit to fly is issued based upon the applicant's declaration of many aspects of the proposed flight or flights, some of which are specific to the applicant. Accordingly, the basis upon which a permit to fly has been issued necessarily is no longer fully in place when the holder of a permit to fly changes, ownership changes, and/or there is a change of register. Such changes necessitate a new application under 21.A.707.

Subpart Q - Identification of products, parts and appliances

GM 21.A.804(a)(1) Identification of parts and appliances

21.A.804(a)(1)

It is not the intent of 21.A.804(a)(1) to introduce an obligation for a production organisation (manufacturer) to mark new parts or appliances with information which is not identified by the design approval holder. Therefore, the physical marking of parts and appliances is only required when established by the design approval (TC, STC, ETSO, repair, change) holder.

For designs (TC, STC, ETSO, repair, change) approved after 28 December 2009 (the date of entry into force of Commission Regulation (EC) No 1194/2009), the design approval holder is required to identify to the manufacturer how the marking in accordance with 21.A.804(a)(1) should be done. This can be limited to identifying a marking field, possible depth and/or means etc., without prescribing the actual text or symbols to be used.

SECTION B

Subpart A - General provisions

GM 21.B.20 Responsibility for implementation

21.B.20

Each certificate or approval in accordance with Part 21 Section A Subparts F, G, H, I and P will normally be issued and controlled by the competent authority of the Member State in whose country the applicant or holder is located. Therefore, to ensure consistency between the competent authorities of the Member States in issuing certificates and approvals, implementation of Part 21 should be based on the following three principles:

a) The establishment and maintenance of an effective organisation and corresponding processes by all competent authorities.

b) The operation of all competent authorities in accordance with Part 21 and its Acceptable Means of Compliance (AMC) and guidance material (GM).

c) A standardisation process established and operated by the Agency to access the standard achieved, and to provide timely advice and guidance to the competent authorities of the Member States.

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

a) To ensure that certificates and approvals are only granted to applicants that comply with the requirements of Part 21; and

b) To ensure sufficient visibility of the processes to give the Agency and the other Member States the necessary confidence in the certificates or approvals granted.

GM 21.B.25(a) Organisation

21.B.25(a)

The competent authority designated by each Member State should have an organisation in such a way that -

a) there is specific and effective management authority in the conduct of all relevant activities,

b) the functions and processes described in Part 21 and its AMC and GM may be properly implemented,

c) the competent authority of the Member State policy, organisation and operating procedures for the implementation of Part 21 are properly documented and applied,

d) all competent authority of the Member State personnel involved in the related activities are provided with training where necessary,

e) specific and effective provision is made for the communication and interface as necessary with the Agency and the competent authorities of the Member States,

f) all functions related to the implementation of Part 21 are adequately described and shown (Standardisation).

A general policy in respect of Part 21 activities should be developed, sponsored and implemented by the manager at the highest appropriate level, for example the top of the functional area of the competent authority of the Member State that is responsible for the related matters.

Appropriate steps should be taken to ensure that the policy is known and understood by all staff involved, and all necessary steps should be taken to implement and maintain the policy.

Whilst satisfying also additional national regulatory responsibilities, the general policy should in particular take into account:

a) the provisions of the Regulation (EC) No 216/2008

b) the provisions of Part 21 and its AMC and GM

c) the needs of industry

d) the needs of the Agency and of the competent authorities of the Member States.

The policy should define specific objectives for key elements of the organisation and processes for implementation of related Part 21 activities, including the corresponding control procedures and the measurement of the achieved standard.

GM 21.B.25(b) Resources

21.B.25(b)

The organisation for related Part 21 activities should be clearly defined within the general organisation of the competent authority of the Member State, with the hierarchical and functional links, and the names of the senior staff. Although final responsibility should be placed at the top of the functional area that is responsible for the related Part 21 activities as a whole, all subordinate levels of management should be suitably resourced and empowered to fulfil their delegated tasks. The definition of an organisation for the implementation of related Part 21 activities should include the specification of

a) a manager responsible for the specific Part 21 activity acting as internal and external focal point. The responsibility is best placed with the manager who is in control of the day-to-day functions concerning the specific Part 21 activity, although he may delegate specific tasks to other individuals;
b) individual or group responsibilities, duties and associated reporting lines;
c) the resources, human and material;
d) the documented procedures to be operated in respect of the relevant Part 21 activities.

The various tasks and responsibilities of the personnel involved in the related Part 21 activities should be clearly identified. The authority attached to the responsibilities should be enough to ensure that the activities will be performed correctly.

These responsibilities include among others:

a) the management of the organisation
b) the management of investigation teams
c) the team leadership/membership
d) the investigation and surveillance activities
e) the administrative management of certificates and approvals including record keeping
f) the external and internal interface activities including feedback to the Agency
g) the control and distribution of documentation

The definition of the organisation should include means to ensure continued effectivity of the organisation. The means should provide for a regular assessment of the organisation and its related activities as well as a feedback system for the follow up of necessary corrective actions (e.g., through the implementation of a quality system, internal audit system, etc.).

GM 21.B.25(c) Qualification and training

21.B.25(c)

The competent authority of the Member State should ensure appropriate and adequate training of its personnel to meet the standard that is considered by the Agency necessary to perform the work. Arrangements should be made for initial and continuation training as required. It is understood that the basic competence of the competent authority of the Member State staff is a matter of recruitment and normal management functions in selection of staff for particular duties. Moreover, it is understood that the competent authority of the Member State provides training in the basic skills as required for those duties.

However, to avoid differences in understanding and interpretation, it is considered important that all personnel involved in Part 21 activities should be provided with further training specifically related to the relevant Part 21 activity up to the common Agency standard. The competent authority of the Member State should provide training through its own training organisation with qualified trainers or through another qualified training source (e.g., training provided by other competent authorities, the Agency or qualified entities).

AMC 21.B.30(a) Documented procedures

21.B.30(a)

The various elements of the organisation for the related Part 21 activities must be documented in order to establish a reference source for the establishment and maintenance of this organisation. The documented procedures must be established in a way that it will facilitate its use. They must be clearly identified, kept up-to-date and made readily available to all the personnel involved in the relevant activities.

The documented procedures must cover, as a minimum, the following aspects:

a) policy and objectives,
b) organisation structure,
c) responsibilities and attached authority,
d) procedures and processes,
e) internal and external interfaces,
f) internal control procedures,
g) training of personnel,
h) cross-references to associated documents,
i) assistance from other competent authorities or the Agency (where required).

Except for smaller competent authorities, it is likely that the information is held in more than one document or series of documents, and suitable cross-reference information must be provided. For example, organisational structure and job descriptions are not usually in the same documentation as the detailed working procedures. In such cases it is recommended that the documented procedures include an index of cross-references to all such other related information, and the related documentation must be readily available when required.

AMC 21.B.35(a) Changes

21.B.35(a)

Standardisation is based on the assessment of the organisation and procedures of the competent authorities of the Member States and their implementation and suitability by the Agency. Consequently, a significant change in the competent authority of the Member State organisation and documented procedures validated by the Agency needs a reassessment to maintain the confidence in the standardisation process.

Examples of significant changes include changes in the organisation hierarchy, decision making levels, number and qualification of personnel, etc.

The competent authority of the Member State must notify any of these changes to the Agency and must be prepared to provide any further explanation/information requested by the Agency. The Agency may decide to review the documented organisation and procedures of the competent authority of the Member State and request any clarification or changes. This might also apply when a change in the regulations takes place and the Agency decides that a specific assessment/monitoring of the competent authorities related to that change is necessary.

GM 21.B.40 Principles for the resolution of disputes

21.B.40

It is essential for the efficient accomplishment of the competent authority of the Member State activities related to Part 21 that all decisions regarding the resolution of disputes are 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.

GM No. 1 to 21.B.45 Co-ordination with other related activities

21.B.45

The purpose of co-ordination with other related activities is to

a) harmonise the effects of various approval and certification teams especially when dealing with one organisation / applicant to prevent conflicts of conclusions,
b) ensure efficient flow of information between the various approval and certification teams to facilitate the execution of their duties
c) optimise the use of the Agency and the competent authorities resources to minimise disruption and cost.

Therefore, for a given organisation / applicant the responsible person(s) of the Agency or competent authorities of the Member State should arrange for exchange of information with, and provide necessary assistance, as appropriate, to the relevant competent authority of the Member State or Agency teams or staff - e.g.:

a) the appropriate certification teams;
b) the design organisation approval team;
c) the production organisation approval team;
d) the maintenance organisation approval team; or

e) other approval or certification teams as appropriate.

GM No. 2 to 21.B.45 Co-ordination

21.B.45

An exchange of information should especially take place in accordance with Article 15 of the Regulation (EC) No 216/2008:

(a) an immediate reaction of a competent authority of the Member State to a safety problem

(b) granting of exemptions by the competent authority of the Member State from the substantive requirements of the Regulation (EC) No 216/2008 and its implementing rules (for a period of more than two months or when the exemptions become repetitive)

(c) granting of approvals on an equivalent level of protection by the competent authority of the Member State by derogation from the Part 21 requirements

GM No. 3 to 21.B.45 Reporting - Information relevant to registers established by the Agency

21.B.45

When so requested by the Agency, the competent authority of the Member State should notify any certificate or approval issued, changed or revoked including details of the scope of that certificate or approval to the Agency for inclusion in a central register managed by the Agency.

GM 21.B.55 Record keeping for design approvals transferred to the Agency

21.B.55

Record keeping related to design approvals, for which the responsibility is transferred to the Agency, will remain initially with the competent authority of the Member State that has granted the approvals, at the disposal of the Agency. This GM specifies the administrative documents to be kept for the various kinds of design approvals. It does not repeat the requirements put on holders of design approvals to keep records (ref. 21.A.55, 21.A.105, 21.A.118A(a)(1), 21.A.447, 21.A.605).

1. Type-certificate
   a) Copy of the type-certificate
   b) Copy of the type-certificate data sheet
   c) Environmental protection approval data
   d) Documents defining the type-certification basis including information to justify special conditions, equivalent safety findings and exemptions (Certification Review Items or equivalent)
   e) List of approved modifications,
   f) List of the competent authority's approved publications (Flight Manual, Repair Manual, Airworthiness Limitations, Certification Maintenance Requirements)
   g) Airworthiness directives
   h) Master Minimum Equipment List
   i) Maintenance Review Board Report
2. Supplemental type certificate
   - Copy of supplemental type certificate
   - Environmental protection approval data
   - Documents defining the certification basis including information to justify special conditions, equivalent safety findings and exemptions (Certification Review Items or equivalent)
   - List of the competent authority's approved documents
   - Airworthiness directives
3. JTSO Authorisation
   - Copy of JTSO authorisation letter
   - Copy of Declaration of Design and Performance
   - Statement of compliance with applicable standards
   - Airworthiness directives
4. Other part or appliance approvals
   a) Copy of approval letter,

b) Copy of Declaration of Design and Performance or equivalent
c) Statement of compliance with applicable standards
d) Airworthiness Directives

5. Changes from non TC or STC holders
   a) Modification approval sheet, or equivalent document
   b) Documents required by 21.A.105, or equivalent national requirement

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

6. Repair design approvals
   a) Repair approval sheet
   b) Documents listed in 21.A.447, or equivalent national requirement

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

Subpart F - Production without Production Organisation Approval

AMC 21.B.120(a) Investigation team - Qualification criteria for the investigation team members

21.B.120(a)

The competent authority must ensure that the team leader and team members have received appropriate training in the relevant Subpart of Part 21 and in the related competent authority documentation before performing investigations. They must also have knowledge and experience at the appropriate level in aviation production and inspection activities relative to the particular application for a letter of agreement.

AMC 21.B.120(c)(1) Evaluation of applications

21.B.120(c)(1)

1. General
When applying Part 21 Section A Subpart F and Section B Subpart F the competent authority must consider that these Subparts are only an alternative way for production to Part 21 Section A Subpart G and Section B Subpart G. To meet the ICAO airworthiness obligations and to issue a Certificate of Airworthiness for an individual aircraft in a practical and efficient way, the competent authority must use a system of approval of production organisations (POA) under Part 21 Section A Subpart G and Section B Subpart G, providing to the competent authority the necessary confidence in technical standards. The consistent standards of these approvals will also support the standardisation efforts by the Agency. Nevertheless it is recognised that it is not always practical, economical and/or advisable to use the POA. Considering ICAO airworthiness obligations as well, Part 21 Section A Subpart F and Section B Subpart F is provided for such a case on the basis of the following principles:
   a) Subpart F must be considered as an alternative option for particular cases
   b) Its adoption must be done on an individual basis, as consequence of an assessment by the competent authority (see 21.A.121, 21.A.133(a) and their associated CS and GM).
2. Application
The competent authority must receive an application for a letter of agreement on an EASA Form 60 (see below) completed by the applicant. The eligibility of the application should be verified in relation to the competent authority procedures, based on 21.A.121 and its associated CS and GM. The applicant should be advised accordingly about the acceptance or rejection of the application.
3. Location of the applicant
The location of the applicant seeking acceptance for production under Part 21 Section A Subpart F determines which competent authority is responsible for issuing the letter of agreement.

EASA Form 60 **Application for agreement of production under Part 21 Subpart F**	
Competent authority of an EU Member State or EASA	
1.Registered name and address of the applicant:	
2.Trade name (if different):	
3.Location(s) of manufacturing activities:	
4.Description of the manufacturing activities under application	
a) Identification (TC, P/N , … as appropriate):	
b) Termination (No. of units, Termination date, …):	
5.Evidence supporting the application, as per 21.A.124(b):	
6.Links/arrangements with design approval holder(s)/design organisation(s) where different from Block 1. :	

7.Human resources:	
8.Name of the person signing the application:	
Date	Signature

EASA Form 60 Issue 3

Block 1: The name of the applicant must be entered. For legal entities the name must be as stated in the register of the National Companies Registration Office. In this case a copy of the entry in the register of the National Companies Registration Office must be provided to the competent authority.

Block 2: State the trade name by which the applicant is known to the public if different from the information given in Block 1. The use of a logo may be indicated in this Block.

Block 3: State all locations of manufacturing activities that are covered by the application. Only those locations must be stated that are directly under the control of the applicant stated in Block 1.

Block 4: This Block must include further details of the manufacturing activities under the approval for the addresses indicated in Block 3. The Block 'Identification' must indicate the products, parts or appliances intended to be produced, while the Block 'Termination' must address any information on the limitation of the activity, e.g., by stating the intended number of units to be manufactured or the expected date of completion of the manufacturing activities.

Block 5: This Block must state evidence supporting the determination of applicability as stated in 21.A.121. In addition an outline of the manual required by 21.A.125(b) must be provided with the application.

Block 6: The information entered here is essential for the evaluation of eligibility of the application. Therefore special attention must be given concerning the completion of this Block either directly or by reference to supporting documentation in relation to the requirements of 21.A.122 and AMC 21.A.122.

Block 7: The information to be entered here must reflect the number of staff, or in case of an initial approval the intended number of staff, for the manufacturing activities under this application and therefore must include also any associated administrative staff.

Block 8: State the name of the person authorised to sign the application.

GM 21.B.120(c)(3) Investigation preparation and planning

21.B.120(c)(3)

Following acceptance of an application and before commencing an investigation the competent authority should:

- identify the site locations needing investigation
- liaise with the competent authority of another Member State where there is seen to be a need to visit a production facility in that State for one of the following reasons:
  - a) where a manufacturer has contracted part of the production to another organisation holding a production organisation approval and a need arises to ensure the contract has the same meaning for all parties to the contract, and the local competent authority of the Member State agrees
  - b) to inspect a product (or part or appliance) under production where the sub-contractor is not holding a POA
- co-ordinate with the competent authority of a third country and/or the Agency where there is seen to be a need to visit a production facility in that country for one of the following reasons:
  - a) where a manufacturer has contracted part of the production to another organisation holding a production organisation approval issued by the Agency or accepted through an recognition agreement in accordance with Article 12 of the Basic Regulation and a need arises to ensure the contract has the same meaning for all parties to the contract, and the Agency and/or the competent authority agrees
  - b) to inspect a product (or part or appliance) under production where the sub-contractor is not holding a POA.

GM 21.B.120(c)(5) and (6) Auditing and investigation findings

21.B.120(c)(5)
21.B.120(c)(6)

During its investigation process, the competent authority may make findings which should then be recorded. These may be non-conformities to the requirements, the manual as supplied by the manufacturer describing its inspection procedures or non-conformities related to the items under inspection. The manner in which the findings will be handled by the competent authority before and during the validity of the letter of agreement, should be detailed in its procedures.

GM 21.B.125(a) Objective evidence

21.B.125(a)

Objective evidence is a fact which is, or can be documented, based on observations, measurements or tests that can be verified. Objective evidence generally comes from the following:

a) documents or manuals
b) examination of equipment/products
c) information from interview questions and observations of production activities

AMC 21.B.130 Issue of the letter of agreement

21.B.130

Unless otherwise agreed by the competent authority no production before the issue of the letter of agreement may be accepted under Part 21 Section A Subpart F.

GM 21.B.130(b) Issue of the letter of agreement

21.B.130(b)

The agreement should include or reference a pre-defined plan of inspection points established as part of the production inspection system and agreed with the competent authority to be used as a basis for the inspections described in 21.A.129 and 21.B.120(c)(5) and its associated CS and GM. The plan should clearly identify inspection point, places, inspection subjects (materials, process, tooling documentation, human resources, etc.), as well as the focal points and the method of communication between the manufacturer and the competent authority.

The competent authority should detail a method how it will assure itself that the manufacturer is working in accordance with the manual and the agreed inspection procedures during the validity period of the agreement. For renewal of this validity period the procedure as defined in 21.B.140 should be used.

Any conditions under which the agreement will expire (such as termination date and/or number of units to produce), should be clearly stated in the letter of agreement.

AMC 21.B.140 Amendment of a letter of agreement

21.B.140

The competent authority must be satisfied that any change affecting a letter of agreement comply with the shows of Section A Subpart F before implementation can start. A plan for the change should be agreed with the applicant in accordance with AMC 21.B.130. If the change affects the content of the letter of agreement, a new application should be filed and an amended/revised letter of agreement should be obtained subsequently.

GM 21.B.150(d) Record keeping - Traceability of release certificates

21.B.150(d)

The recordkeeping for those EASA Forms 52 and 1 that have been validated by the competent authority should allow verification of such validation by concerned parties including the recipients of the release certificates.

Subpart G- Production Organisation Approval

GM-ELA No 1 to 21.B.220 Investigation

21.B.220

The AMC indicated with 'AMC-ELA' and the GM related to them (as indicated with 'GM-ELA'), provide an alternative set of AMC and GM to the other available AMC and GM.

The AMC-ELA provide acceptable means to meet the requirements for small, non-complex organisations that produce aircraft as specified in AMC-ELA No 1 to 21.A.131.

GM-ELA No 1 to 21.B.220(a) Investigation team

21.B.220(a)

1. Type of team

When appointing a production organisation approval team (POAT), it is important for the member(s) of that team to have a very good understanding of the organisational processes, as well as of the nature and the established manufacturing practices for products that are within the scope of work of the applicant.

The AMC-ELA of Section A of Subpart G for production organisations substantially relies on product conformity and uses, if possible, existing quality management systems. The team should, therefore, be familiar with:

(a) conducting product conformity audits;

(b) alternative quality management systems that are typically applied by companies that produce light aeroplanes, such as ISO 9001, EN 9100, ASTM F2972, or similar standards;

(c) the typical practices used for the production of light aeroplanes and the related products and parts.

If the team is not able to cover all the aspects of the product that are considered to be within the scope of work of the applicant, the production organisation approval team leader (POATL) should coordinate with both the competent authority and the production organisation on identifying suitable subject-matter expert(s) who may provide support during the investigation. The overall size of the team should be adequate for the size of the company to be investigated.

GM 21.B.220(a) Investigation team

21.B.220(a)

1. Type of Team

Where the applicant is located in a Member State, the competent authority should appoint a production organisation approval team (POAT) leader and members appropriate to the nature and scope of the applicant's organisation.

Where the facilities of the applicant are located in more than one Member State, the competent authority of the country of manufacture should liaise with the other involved competent authorities to agree and appoint a POAT leader and members appropriate to the nature and scope of the applicant's organisation.

2. Team leader selection

The team leader should satisfy all of the criteria for a team member and will be selected by considering the following additional criteria:

a) the capability to lead and manage a team
b) the capability to prepare reports and be diplomatic
c) experience in approval team investigations (not necessarily only Part 21 Section A Subpart G)
d) a knowledge of production and quality systems for aircraft and related products and parts

3. Team member selection

The team leader should agree with the competent authority on the size of the POA team and the specialisations to be covered taking into account the scope of work and the characteristics of the applicant. Team members should be selected by considering the following criteria:

- training, which is mandatory, for Part 21 Section A, Subpart G and Section B, Subpart G
- education and experience, to cover appropriate aviation knowledge, audit practices and approval procedures
- the ability to verify that an applicant's organisation conforms to its own POA procedures, and that its key personnel are competent.

AMC-ELA No 1 to 21.B.220(b) Extent of the investigation

21.B.220(b)

The initial and the continued investigations of a company should primarily be conducted by investigating the conformity of products on which work is in progress, or following their completion, and by direct product assessment, or the assessment of product-related production records.

When conducting investigations on companies that apply either a production organisation exposition (POE) and/or a company manual that is based on a template[1] provided in accordance with the GM-ELA to Subpart G of Section A, the competent authority should verify whether the documentation has been adequately adapted to the specific details of the company.

Note [1]: A POE template, published by EASA, is provided as additional informative material. This material should not be considered as an AMC.

In order to avoid any duplication of oversight, the competent authority may use systems that implement ISO 9001 or AS/EN 9100 (including audit records) as evidence for compliance investigations.

When the company is capable of manufacturing products that are within the scope of work in a repeatable way, so that they conform to the type design, the competent authority should consider this to be sufficient evidence for the issuance, maintenance or amendment of the approval.

If non-conformities are encountered that reveal a lack of consistent production control, further investigations should be conducted by the company to establish the root cause and the appropriate corrective actions.

AMC 21.B. 220(c) Procedures for investigation - Evaluation of applications

21.B.220(c)

The competent authority must receive an application for POA on an EASA Form 50 (see below) completed by the applicant. The eligibility and appropriateness of the application must be evaluated in accordance with 21.A.133 at that time and the applicant must be advised about acceptance or rejection of its application in writing accordingly.

EASA Form 50 **Application for Part 21 production organisation approval**	
Competent authority **of an EU Member State or** **EASA**	
1. Registered name and address of the organisation:	
2. Trade name (if different):	
3.Locations for which the approval is applied for:	
4.Brief summary of proposed activities at the item 3 addresses	
a) General:	
b) Scope of approval:	
c) Nature of privileges:	
5.Description of organisation:	
6.Links/arrangements with design approval holder(s)/design organisation(s) where different from 1. :	
7.Approximate number of staff engaged or intended to be engaged in the activities:	
8.Position and name of the accountable manager:	
Date	Signature of the accountable manager

EASA Form 50

Block 1: The name of the organisation must be entered as stated in the register of the National Companies Registration Office. For the initial application a copy of the entry in the register of the National Companies Registration Office must be provided to the competent authority.

Block 2: State the trade name by which the organisation is known to the public if different from the information given in Block 1. The use of a logo may be indicated in this Block.

Block 3: State all locations for which the approval is applied for. Only those locations must be stated that are directly under the control of the legal entity stated in Block 1.

Block 4: This Block must include further details of the activities under the approval for the addresses indicated in Block 4. The Block 'General' must include overall information, while the Block 'Scope of approval' must address the scope of work and products/categories following the principles laid down in the GM 21.A.151. The Block 'nature of privileges' must indicate the requested privileges as defined in 21.A.163(b)-(e). For an application for renewal state 'not applicable'.

Block 5: This Block must state a summary of the organisation with reference to the outline of the production organisation exposition, including the organisational structure, functions and responsibilities. The nomination of the responsible managers in accordance with 21.A.145(c)(2) must be included as far as possible, accompanied by the corresponding EASA Forms 4. For an application for renewal state 'not applicable'.

Block 6: The information entered here is essential for the evaluation of eligibility of the application. Therefore special attention must be given concerning the completion of this Block either directly or by reference to supporting documentation in relation to the requirements of 21.A.133(b) and (c) and the AMC to 21.A.133(b) and (c).

Block 7: The information to be entered here must reflect the number of staff, or in case of an initial approval the intended number of staff, for the complete activities to be covered by the approval and therefore must include also any associated administrative staff.

Block 8: State the position and name of the accountable manager.

AMC-ELA No 1 to 21.B.220(c) Procedures for investigation — Evaluation of applications

21.B.220(c)

EASA Form 50 from AMC 21.B.220(c) applies, with the following instructions for its completion:

Block 1: The name of the organisation must be entered as stated in the register of the National Companies Registration Office. For the initial application, a copy of the entry in the register of the National Companies Registration Office must be provided to the competent authority.

Block 2: state the trade name by which the organisation is known to the public if different from the information given in Block 1. The use of a logo may be indicated in this Block.

Block 3: State the major place of activity as per definition in AMC-ELA No 2 to 21.A.131 and where the products are completed and checked out, and for which the approval is applied for.

Block 4: This Block must include further details of the activities under the approval for the addresses indicated in Block 4. ‘General’ shall include the relevant part of the Scope definition provided by AMC-ELA No 1 to 21.A.131. ‘Scope of approval’ shall name the applicable scope (refer to GM-ELA No 1 to 21.A.151). A reference to the product type(s) may be provided for further clarification, even when this information will not be part of the terms of approval of the approved production organisation. ‘Nature of privileges’ shall list what is applicable of ‘21.A.163(a), (b), (c), (d), (e)’.

Block 5: If existing at the time of application, make reference to the draft version of the POE as per AMC-ELA No 1 to 21.A.143. Otherwise state: ‘Will be provided when the POE draft is available.’ For an application for renewal, state: ‘Not applicable.’

Block 6: Depending on the case, either of ‘Production and holder of the type certificate/design approval operate within one consolidated entity and under one management’; or ‘Satisfactory coordination between production and type certificate/design approval holder is ensured by implementation of adequate responsibilities for the coordination in both directions.’

Block 7: The information to be entered here must reflect the approximate number of staff, or in case of an initial approval, the intended number of staff, for the complete activities to be covered by the approval and therefore must include also any associated administrative staff.

Block 8: State the position and name of the accountable manager.

AMC-ELA No 2 to 21.B.220(c) Procedures for investigation — General

21.B.220(c)

1. General

The competent authority needs to investigate the applicant's production organisation for its ability to produce products within the scope of work and that conform to the type in a repeatable way, so that they conform to the type design. It should establish procedures that include the following aspects:

2. Preparation and planning for an investigation

2.1. The POA team leader (POATL) should initiate the investigation of a new applicant by arranging a meeting with the applicant, in which the applicant should provide a general presentation of its organisation and products, parts or appliances, and in which the POATL should describe the investigation process to the applicant.

2.2. The POA team (POAT) should study the information gathered in the initiation phase, including information from other teams of the competent authority of the Member State or EASA on the functioning of the applicant's organisation, especially when the production organisation and the design organisation form one consolidated team.

2.3. The POAT should establish an investigation plan that:

- takes account of the location of the POA applicant's facilities;
- defines the subject matter that will be covered by the team members;
- identifies any areas of expertise that the team may be lacking in, and how to seek external advice;
- includes a comprehensive plan for auditing a representative set of products while work is in progress or following its completion, and by direct product assessment, or assessment of product-related production records; and
- includes liaison with the applicant in order to plan mutually suitable dates and times for visits, to determine the necessary size of the investigation team on both sides, and to agree on the investigation plan and the approximate timescales.

3. Investigation

3.1. Evaluation of the documentation (production organisation exposition (POE), procedures, etc.)

The POAT should:

- assess the POE for compliance with point 21.A.143, e.g. by using AMC-ELA No 1 to 21.A.143;
- evaluate (as applicable) the use of ISO 9001 or AS/EN 9100 in accordance with AMC-ELA No 1 to 21.B.220(b).

3.2. Auditing

The POAT should:

- audit the product and its associated documentation for conformity with the provisions of the relevant type design. If discrepancies are found on the audited product, the POATL should assess whether the definitions of the quality system have been adhered to, and whether those definitions may have been misleading and may have contributed to the discrepancies, which may indicate a need for a modification;
- review the acceptance of the key nominated personnel, confirmed by the completed EASA Form 4 (refer to AMC-ELA No 1 to 21.A.145(c)), on the basis of a review of the skills of each nominee, used as the basis for the nomination;
- conduct sample audits at appropriate stages of production to verify that:
  (i) the products, parts, appliances and material produced by the organisation are in conformity with the applicable design data;
  (ii) the level of product conformity achieved indicates that the facilities, working conditions, equipment and tools are appropriate to allow the work to be performed in a repeatable way;
  (iii) the achieved production rate and the number of product non-conformities indicate that the number of personnel and their competences are sufficient to allow the work to be performed in a repeatable way; and
  (iv) the identified responsibilities and examples show that there is satisfactory and effective coordination between the production entity and the design entity.

  The investigation team should be accompanied during the sample audits by company representatives who are knowledgeable about the applicant's organisation and procedures. This will

ensure that the organisation is aware of the progress of the audit and of any problems as they arise. This will also make it easier for the investigation team to gain access to the information of the company;
- coordinate with the subject-matter experts who provide external advice for any areas of expertise that the team may be lacking in, and enable an efficient investigation to take place, which will provide consistent and effective investigations and reporting;
- meet the accountable manager at least once during the investigation process, and preferably twice. The accountable manager should be briefed on the investigation process and on the results of the investigation.

3.3. Follow-up of corrective actions

In order to draft the audit report, the POAT should hold a meeting with the applicant to review any findings and observations.

The POAT, upon completion of the investigation, should hold a meeting with the applicant to verbally present the report.

The POAT should present the findings, the corrective action plan, and the preliminary arrangements for any follow-up that may be necessary.

The POATL should transmit the final report, together with the minutes of the final meeting with the applicant, to the competent authority of the applicant. The report should include any recommendations for improvements and any significant findings, together with appropriate conclusions and a corrective action plan. In particular, it should indicate whether the POE is acceptable, or changes are required.

If the findings made during the investigation mean that a recommendation for approval will not or cannot be issued, then the related findings should be provided to the applicant in writing within 2 weeks' time from the date of the visit.

3.4. Recommendation for the issuance, amendment, suspension or revocation of a production organisation approval

The POATL should track the feedback obtained from the applicant, taking into consideration the timelines specified in point 21.A.158(c). The POATL should consider the means provided by AMC-ELA No 1 to 21.B.230. The recommendation should be documented using EASA Form 56, Part 5.

<ref to AMC-ELA no1 to 21.B.230, missing!!>

3.5. Continued surveillance

Subsequent to an initial approval, the POATL should coordinate with the applicant on a mutually agreed surveillance plan that is appropriate for the size, product range and production rate of the company, taking into consideration the means provided by AMC-ELA No 1 to 21.B.235.

GM No. 1 to 21.B.220(c) Procedures for investigation - Investigation preparation and planning

21.B.220(c)

Following the acceptance of the application and before commencing an investigation, the competent authority should, for the preparation and planning of the investigation:

- identify the site locations needing investigation taking into account the scope of any other POA issued by a Member State, which are valid in the circumstances
- liaise with the Agency for the appointment of any necessary observer(s) for standardisation purposes
- establish any necessary liaison arrangement with other competent authorities
- agree the size and composition of the POAT and any specialist tasks likely to be covered and to select suitable team members from all involved competent authorities
- seek any necessary advice and guidance from the Agency
- liaise with the competent authority of the other Member State where there is seen to be a need to visit a production approval holder facility in that Member State for one of the following reasons:
  1) where a manufacturer has subcontracted production to another organisation and therefore a need arises to ensure that contract has the same meaning for all parties to the contract, and the competent authority of the Member State agrees
  2) to inspect a product, part, appliance, or material under production for its own, Member States or non-EU register.

GM No. 2 to 21.B.220(c) Procedures for investigation - General

21.B.220(c)

1. Purpose of the Procedures

The purpose is to investigate the applicant production organisation for compliance with Part 21 Subpart G in relation to the requested terms of approval. When appropriate, this procedure should also be used to investigate significant changes or applications for variation of scope of approval.

The following procedure assumes that the application has been accepted and that an investigation team has been selected.

2. Initiation

The POA Team Leader initiates the procedure by:

2.1 arranging a meeting with the POAT members to review the information provided in accordance with 21.A.134 and to take account of any knowledge that the POAT members have regarding the production standards of the applicant

2.2 obtaining information from other teams of a competent authority of the Member State or the Agency on the functioning applicant organisation (see GM No. 1 to 21.B.45)

2.3 arranging a meeting with the applicant in order to:

- enable the applicant to make a general presentation of its organisation and products, parts or appliances
- enable the POAT to describe the proposed investigation process
- enable the POAT to confirm to the applicant the identity of those managers nominated in accordance with Part 21 Subpart G who need to complete an EASA Form 4 (See EASA Form 4 for Production Organisations on EASA website: http://easa.europa.eu/certification/application-forms.php). The applicant should provide a completed copy of EASA Form 4 for each of the key management staff identified by Part 21 Subpart G. The EASA Form 4 is a confidential document and will be treated as such.

3. Preparation

The POAT:

3.1 studies the information gathered in the initiation phase

3.2 establishes an investigation plan which:

- takes account of the location of the POA applicants facility as identified per GM No. 3 to 21.B.220(c)
- defines areas of coverage and work-sharing between POAT members taking account of their individual expertise
- defines areas where more detailed investigation is considered necessary
- establishes the need for external advice to POAT members where expertise may be lacking within the team
- includes completion of a comprehensive plan for the investigation in order to present it to the applicant
- recognises the need to:
- review the documentation and procedures
- verify compliance and implementation
- audit a sample of products, parts, and appliances

3.3 co-ordinates with the appropriate Part 21 Section A Subpart J design organisation approval Teams sufficiently for both parties to have confidence in the applicants co-ordination links with the holder of the approval of the design (as required by 21.A.133)

3.4 establishes liaison with the applicant to plan mutually suitable dates and times for visits at each location needing investigation, and also to agree the investigation plan and approximate time scales with the applicant

4. Investigation

The POAT:

4.1 makes a check of the POE for compliance with Part 21 Subpart G

4.2 audits the organisation, its organisational structure, and its procedures for compliance with Part 21 Subpart G, using EASA Form 56 as a guide during the investigation, and as a checklist at the end of it

4.3. generates compliance checklists for investigations of working processes and procedures on site as required

4.4 accepts or rejects each EASA Form 4 completed by the key nominated personnel in accordance with 21.A.145(c)(2)

4.5 checks that the production organisation exposition (POE) standard reflects the organisation, its procedures, practices and 21.A.143. Having checked and agreed a POE issue or subsequent amendment, the competent authority should have a clear procedure to indicate its acceptance or rejection

4.6 makes sample audits at working level to verify that:-

(i) work is performed in accordance with the system described in the POE

(ii) products, parts, appliances or material produced by the organisation are in conformity with the applicable design data (see GM 21.B.235(b)(4)). *<kenties (a)(4)??>*

(iii) facilities, working conditions, equipment and tools are in accordance with the POE and appropriate for the work being performed

(iv) competence and numbers of personnel is appropriate for the work being performed

(v) co-ordination between production and design is satisfactory

4.7 at an advanced stage of the investigation, conducts an interim team review of audit results and matters arising, in order to determine any additional areas requiring investigation.

Each investigation team should be accompanied during the process by company representatives who are knowledgeable of the applicants organisation and procedures. This will ensure that the organisation is aware of audit progress and problems as they arise. Access to information will also be facilitated.

The POATL should co-ordinate the work of POAT members for an efficient investigation process, which will provide a consistent and effective investigation and reporting standards.

5. Conclusions

5.1 The POATL holds a team meeting to review findings and observations so as to produce a final agreed report of findings.

5.2 The POATL, on completion of the investigation, holds a meeting to verbally presents the report to the applicant.

The POATL should be the chairman of this meeting, but individual team members may present their own findings and observations.

5.3 The meeting should agree the findings, corrective action time scales, and preliminary arrangements for any follow up that may be necessary.

5.4 Some items may as a result of this meeting be withdrawn by the POATL but if the investigation has been correctly performed, at this stage there should be no disagreement over the facts presented.

5.5 Inevitably there will be occasions when the POAT member carrying out the audit may find situations in the applicant or POA holder where it is unsure about compliance. In this case, the organisation is informed about possible non-compliance at the time and advised that the situation will be reviewed within the competent authority before a decision is made. The organisation should be informed of the decision without undue delay. Only if the decision results in a confirmation of non-compliance this is recorded in Part 4 of EASA Form 56.

5.6 The POATL will transmit the final signed report on EASA Form 56 together with notes of the final meeting with the applicant to the competent authority where the applicant is located. The report will include recommendations and significant findings, together with appropriate conclusions and corrective actions. In particular, it should indicate if the POE is acceptable, or changes are required.

5.7 Completion of EASA Form 56 includes the need to record in Part 4 comments, criticisms, etc., and this must reflect any problems found during the visit and must be the same as the comments, criticisms made to the organisation during the debrief. Under no circumstances should additional comments, criticisms, etc., be included in Part 4 of the report unless the applicant or POA holder has previously been made aware of such comments.

Many applicants may need to take corrective action and amend the proposed exposition before the competent authority is able to conclude its investigation. Such corrective actions should be summarised in Part 4 of the EASA Form 56 and a copy always given to the applicant, so that there is a common understanding of the actions necessary before approval can be granted.

The intention of the EASA Form 56 Part 4 is to provide a summary report of findings and outstanding items during initial investigation and major changes. The competent authority will need to operate a

supporting audit system to manage corrective action monitoring, closure etc. While the EASA Form 56 Part 4 format may be used for monitoring purposes, it is not adequate on its own to manage such system.

5.8 If the findings made during the investigation mean that approval recommendation will not or cannot be issued, then it is essential that such findings are confirmed in writing to the organisations within two weeks of the visit. The reason for confirmation in writing is that many organisations take a considerable time to establish compliance. As a result, it is too easy to establish a position of confusion where the organisation claims it was not aware of the findings that prevented issue of an approval.

6. Management Involvement

The accountable manager will be seen at least once during the investigation process and preferably twice, because he or she is ultimately responsible for ensuring compliance with the requirements for initial grant and subsequent maintenance of the production organisation approval. Twice is the preferred number of visits to the accountable manager, with one being conducted at the beginning of the audit to explain the investigation process and the second, at the end, to debrief on the results of the investigation.

Competent authority
of an EU Member State or
EASA

RECOMMENDATION REPORT IN SUPPORT OF Part 21 SUBPART G APPROVAL ISSUE / CONTINUATION / VARIATION / SIGNIFICANT CHANGE

PART ONE OF FIVE PARTS: BASIC DETAILS OF THE ASSESSMENT

Name of the organisation:

Approval reference: _____

Address(es) of the facilities surveyed:

Main Part 21 Subpart G activities at facilities surveyed:

Date(s) of survey:

Names and positions of the organisation's senior management attended during survey:

Names of the competent authority staff:

Office: EASA Form 56 completion date:

Note: If it is determined that recommendation for issue/continuation/variation/significant change of approval cannot be made because of non-compliance with Part 21 Subpart G, the reasons for non-compliance need to be identified in PART 4 of the report. A copy of PART 1 and PART 4, or at least the information included in these parts, must be given to the organisation to ensure that the organisation, in failing to obtain Part 21 Subpart G approval, even if only temporarily, has the same information as is on the files of the competent authority.

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Competent authority
of an EU Member State or
EASA

RECOMMENDATION REPORT IN SUPPORT OF Part 21 SUBPART G ISSUE / CONTINUATION / VARIATION/ SIGNIFICANT CHANGE

PART TWO OF FIVE PARTS: Part 21 SUBPART G COMPLIANCE

Name of organisation:

Approval of organisation:

Approval reference: _____ Survey reference:

Note A: This form has been compiled according those points of Part 21 Subpart G which are relevant to an organisation trying to demonstrate compliance.
Note B: The right hand part of each box must be completed with one of three indicators:
1. a tick (?) which means compliance;
2. NR which means the requirement is Not Relevant to the activity at the address surveyed; (the reason for NR should be stated in Part 4 of the report, unless the reason is obvious)
3. a number relating to a comment which must be recorded in Part 4 of the report.
The left hand part of each box is optional for use by the competent authority.

21.A.133 Eligibility

Any natural or legal person ('organisation') shall be eligible as an applicant for an approval under this Subpart. The applicant shall:

(a) justify that, for a defined scope of work, an approval under this Subpart is appropriate for the purpose of showing conformity with a specific design; and

(b) hold or have applied for an approval of that specific design; or

(c) have ensured, through an appropriate arrangement with the applicant for, or holder of, an approval of that specific design, satisfactory co-ordination between production and design.

21.A.134 Application

Each application for a production organisation approval shall be made to the competent authority in a form and manner established by that authority, and shall include an outline of the information required by point 21.A.143 and the terms of approval requested to be issued under point 21.A.151.

PART TWO OF FIVE (CONTINUED): SURVEY REFERENCE:

21.A.139 Quality System

(a) The production organisation shall demonstrate that it has established and is able to maintain a quality system. The quality system shall be documented. This quality system shall be such as to enable the organisation to ensure that each product, part or appliance produced by the organisation or by its partners, or supplied from or subcontracted to outside parties, conforms to the applicable design data and is in condition for safe operation, and thus exercise the privileges set forth in point 21.A.163.

(b) The quality system shall contain:

(1) as applicable within the scope of approval, control procedures for:

(i) document issue, approval, or change;

(ii) vendor and sub-contractor assessment audit and control;

(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;
(iv)		identification and traceability;
(v)		manufacturing processes;
(vi)		inspection and testing, including production flight tests;
(vii)		calibration of tools, jigs, and test equipment;
(viii)		non-conforming item control;
(ix)		airworthiness co-ordination with the applicant for, or holder of, a design approval;
(x)		records completion and retention;
(xi)		personnel competence and qualification;
(xii)		issue of airworthiness release documents;
(xiii)		handling, storage and packing;
(xiv)		internal quality audits and resulting corrective actions;
(xv)		work within the terms of approval performed at any location other than the approved facilities;
(xvi)		work carried out after completion of production but prior to delivery, to maintain the aircraft in a condition for safe operation;
(xvii)		issue of permit to fly and approval of associated flight conditions.
		The control procedures need to include specific provisions for any critical parts.

(b) The quality system shall contain (cont'd) -

(2) An independent quality assurance function to monitor compliance with, and adequacy of, the documented procedures of the quality system. This monitoring shall include a feedback system to the person or group of persons referred to in point 21.A.145(c)(2) and ultimately to the manager referred to in point 21.A.145 (c)(1) to ensure, as necessary, corrective action.

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PART TWO OF FIVE (CONTINUED): SURVEY REFERENCE:

21.A.143 Exposition

(a) The organisation shall submit to the competent authority a production organisation exposition providing the following information: (see Part 3 of this Form)

(b) The production organisation exposition shall be amended as necessary to remain an up-to-date description of the organisation, and copies of any amendments shall be supplied to the competent authority.

21.A.145 Approval requirements

The production organisation shall demonstrate, on the basis of the information submitted in accordance with point 21.A.143 that:

(a) with regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, and general organisation are adequate to discharge obligations under 21.A.165;

(b) with regard to all necessary airworthiness, noise, fuel venting and exhaust emissions data:

(1) the production organisation is in receipt of such data from the Agency, and from the holder of, or applicant for, the type-certificate, restricted type-certificate or design approval to determine conformity with the applicable design data;

(2) the production organisation has established a procedure to ensure that airworthiness, noise, fuel venting and exhaust emissions data are correctly incorporated in its production data;

(3) such data are kept up to date and made available to all personnel who need access to such data to perform their duties;

(c) with regard to management and staff:

(1) A manager has been nominated by the production organisation, and is accountable to the competent authority. His or her responsibility within the organisation shall consist of ensuring that all production is performed to the required standards and that the production organisation is continuously in compliance with the data and procedures identified in the exposition referred to in point 21.A.143.

(2) a person or a group of persons have been nominated by the production organisation to ensure that the organisation is in compliance with the requirements of this Annex I (Part 21), and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in point (1). The knowledge, background and experience of the persons nominated shall be appropriate to discharge their responsibilities;

(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 co-ordination within the production organisation in respect of airworthiness, noise, fuel venting and exhaust emission data matters;

(d) with regard to certifying staff, authorised by the production organisation to sign the documents issued under point 21.A.163 under the scope or terms of approval:

(1) the knowledge, background (including other functions in the organisation), and experience of the certifying staff are appropriate to discharge their allocated responsibilities;

(2) the production organisation maintains a record of all certifying staff which shall include details of the scope of their authorisation;

(3) certifying staff are provided with evidence of the scope of their authorisation.

PART TWO OF FIVE (CONTINUED): SURVEY REFERENCE:

21.A.147 Changes to the approved production organisation

(a) After the issue of a production organisation approval, each change to the approved production organisation that is significant to the showing of conformity or to the airworthiness and characteristics of noise, fuel venting and exhaust emissions of the product, part or appliance, particularly changes to the quality system, shall be approved by the competent authority. An application for approval shall be submitted in writing to the competent authority and the organisation shall demonstrate to the competent authority before implementation of the change, that it will continue to comply with this Subpart.

(b) The competent authority shall establish the conditions under which a production organisation approved under this Subpart may operate during such changes unless the competent authority determines that the approval should be suspended.

21.A.148 Changes of location

A change of the location of the manufacturing facilities of the approved production organisation shall be deemed of significance and therefore shall comply with point 21.A.147.

21.A.149 Transferability

Except as a result of a change in ownership, which is deemed significant for the purposes of point 21.A.147, a production organisation approval is not transferable.

21.A.151 Terms of approval

The terms of approval shall identify the scope of work, the products or the categories of parts and appliances, or both, for which the holder is entitled to exercise the privileges under point 21.A.163. Those terms shall be issued as part of a production organisation approval.

21.A.153 Changes to the terms of approval

Each change to the terms of approval shall be approved by the competent authority. An application for a change to the terms of approval shall be made in a form and manner established by the competent authority. The applicant shall comply with the applicable requirements of this Subpart.

21.A.157 Investigations

A production organisation shall make arrangements that allow the competent authority to make any investigations, including investigations of partners and sub-contractors, necessary to determine compliance and continued compliance with the applicable requirements of this Subpart.

21.A.163 Privileges

Pursuant to the terms of approval issued under point 21.A.135, the holder of a production organisation approval may:

(a) perform production activities under this Annex I (Part 21).

(b) in the case of complete aircraft and upon presentation of a statement of conformity (EASA Form 52) under point 21.A.174, obtain an aircraft certificate of airworthiness and a noise certificate without further showing;

(c) in the case of other products, parts or appliances, issue authorised release certificates (EASA Form 1) under 21.A.307 without further showing;

(d) maintain a new aircraft that it has produced and issue a certificate of release to service (EASA Form 53) in respect of that maintenance;

(e) under procedures agreed with its competent authority for production, for an aircraft it has produced, and when the production organisation itself is controlling under its POA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight, to issue a permit to fly in accordance with point 21.A.711(c) including approval of the flight conditions in accordance with point 21.A.710(b).

PART TWO OF FIVE (CONTINUED): SURVEY REFERENCE:

21.A.165 Obligations of the holder

The holder of a production organisation approval shall:

(a) ensure that the production organisation exposition furnished in accordance with point 21.A.143 and the documents to which it refers, are used as basic working documents within the organisation;

(b) maintain the production organisation in conformity with the data and procedures approved for the production organisation approval;

(c) (1) determine that each completed aircraft conforms to the type design and is in condition for safe operation prior to submitting statements of conformity to the competent authority; or

(2) determine that other products, parts or appliances are complete and conform to the approved design data and are in a condition for safe operation before issuing an EASA Form 1 to certify conformity to approved design data and in a condition for safe operation, and additionally in case of engines, determine according to data provided by the engine type-certificate holder that each completed engine is in compliance with the applicable emissions requirements as defined in point 21.A.18(b), current at the date of manufacture of the engine, to certify emissions compliance; or

(3) determine that other products, parts or appliances conform to the applicable data before issuing EASA Form 1 as a conformity certificate;

(d) record all details of work carried out;

(e) establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to extract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;

(f) (1) report to the holder of the type-certificate or design approval, all cases where products, parts or appliances have been released by the production organisation and subsequently identified to have possible deviations from the applicable design data, and investigate with the holder of the type-certificate or design approval in order to identify those deviations which could lead to an unsafe condition;

(2) report to the Agency and the competent authority of the Member State, or both, the deviations which could lead to an unsafe condition identified according to point (1). Such reports shall be made in a form and manner established by the Agency under point 21.A.3A(b)(2) or accepted by the competent authority of the Member State;

(3) where the holder of the production organisation approval is acting as a supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data;

(g) provide assistance to the holder of the type-certificate or design approval in dealing with any continuing airworthiness actions that are related to the products parts or appliances that have been produced;

(h) establish an archiving system incorporating requirements imposed on its partners, suppliers and sub-contractors, ensuring conservation of the data used to justify conformity of the products, parts or appliances. Such data shall be held at the disposal of the competent authority and be retained in order to provide the information necessary to ensure the continuing airworthiness of the products, parts or appliances;

(i) where, under its terms of approval, the holder issues a certificate of release to service, determine that each completed aircraft has been subjected to necessary maintenance and is in condition for safe operation, prior to issuing the certificate;

(j) where applicable, under the privilege of point 21.A.163(e), determine the conditions under which a permit to fly can be issued;

(k)	where applicable, under the privilege of point 21.A.163(e), establish compliance with point 21.A.711(c) and (e) before issuing a permit to fly to an aircraft.	

Competent authority
of an EU Member State or
EASA

RECOMMENDATION REPORT IN SUPPORT OF Part 21 SUBPART G ISSUE / CONTINUATION / VARIATION/ SIGNIFICANT CHANGE

PART THREE OF FIVE PARTS: Part 21 SUBPART G EXPOSITION COMPLIANCE

Name of organisation:

Approval of organisation:

Approval reference: _____ Survey reference:

Note A: Each box must be completed with one of three indicators:

1. a tick (v) which means compliance;
2. NR which means the requirement is NOT RELEVANT to the activity at the address surveyed; (The reason for NR should be stated in Part 4 of the report unless the reason is obvious.);
3. a number relating to a comment which must be recorded in Part 4 of the report.

Note B: The exposition may be compiled in any subject order as long as all applicable subjects are covered.

Note C: If the organisation holds another Part approval requiring an exposition or handbook it is acceptable to use this index as a supplement to the existing exposition or handbook and to cross-refer each subject to the position in the existing exposition or handbook.

Production organisation exposition

Revision Status:

(Content as required by 21.A.143(a))

(1)		A statement signed by the accountable manager confirming that the production organisation exposition and any associated manuals which define the approved organisation's compliance with this Subpart will be complied with at all times;
(2)		the title(s) and names of the managers accepted by the competent authority in accordance with point 21.A.145(c)(2);
(3)		the duties and responsibilities of the manager(s) as required by point 21.A.145(c)(2) including matters on which they may deal directly with the competent authority on behalf of the organisation.
(4)		an organisational chart showing associated chains of responsibility of the managers as required by point 21.A.145(c)(1) and (c)(2);

(5)		a list of certifying staff as referred to in point 21.A.145(d) [Note : a separate document may be referenced]
(6)		a general description of man-power resources;

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PART THREE OF FIVE (CONTINUED): SURVEY REFERENCE:

(7)		a general description of the facilities located at each address specified in the production organisation's certificate of approval.
(8)		a general description of the production organisation's scope of work relevant to the terms of approval;
(9)		the procedure for the notification of organisational changes to the competent authority;
(10)		the amendment procedure for the production organisation exposition;
(11)		a description of the quality system and the procedures as required by point 21.A.139(b)(1);
(12)		a list of those outside parties referred to in point 21.A.139 (a). [Note : a separate document may be referenced]

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Competent authority
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RECOMMENDATION REPORT IN SUPPORT OF Part 21 SUBPART G APPROVAL
ISSUE / CONTINUATION / VARIATION/SIGNIFICANT CHANGE

PART FOUR OF FIVE PARTS: FINDINGS ON Part 21 SUBPART G COMPLIANCE STATUS

Name of organisation:

Approval reference: _____ Survey reference: _____

Note A: Each finding must be identified by number and the number must cross-refer to the same number in a box in Part 2 or 3 of the Part 21 Subpart G survey report.

Note B: As stated in Part 1 any comments recorded in this Part 4 should be copied to the organisation surveyed together with Part 1.

Note C: In case of a partial clearance of a finding with some outstanding action remaining, this action has to be identified.

NO:	FINDING	LEVEL	OUTSTANDING ACTION	CLEARANCE DATE	CLEARANCE REP.REF.

NAME & SIGNATURE OF SURVEYOR: Date:

PART FOUR OF FIVE (CONTINUED): Sheet ___ of ___

Survey reference: _____

NO:	FINDING	LEVEL	OUTSTANDING ACTION	CLEARANCE DATE	CLEARANCE REP.REF.

NAME & SIGNATURE OF SURVEYOR: Date:

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RECOMMENDATION REPORT IN SUPPORT OF Part 21 SUBPART G APPROVAL ISSUE / CONTINUATION / VARIATION/SIGNIFICANT CHANGE

PART FIVE OF FIVE PARTS: Part 21 SUBPART G APPROVAL RECOMMENDATION
Name of organisation:
Approval reference: _____ Survey reference: _____
Recommendation for issue / variation of approval/significant change:
The following Part 21 Subpart G Terms of approval are recommended for the above organisation at the address(es) specified in Part 1 of this report:
or
Recommendation for continuation of existing approval:
It is recommended that the Part 21 Subpart G Terms of approval identified in EASA Form 55 referenced _____ be continued.
☐ Reporting performed according to procedure for authority surveillance of suppliers of a POA holder located in other Member States, if applicable (Strict confidentiality to be observed) Name of competent authority surveyor making recommendation:

Signature of the competent authority surveyor:

Competent authority office: Date:

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GM No. 3 to 21.B.220(c) Procedures for investigation - POA applications received from organisations with facilities/partners/suppliers/sub-contractors located in a third country

21.B.220(c)

The obligations of the applicant are totally independent from the surveillance exercised by the competent authority. It is not acceptable that the applicant relies on surveillance activities of the competent authority to simplify its tasks.

Facilities located in a third country

When any part of the production facilities of an applicant for POA is located outside the Member States, then the location will be treated in all aspects as part of the applicant's POA organisation.

Therefore the investigating competent authority will:

a) include the facilities outside the Member States fully in their investigation and surveillance activities for the applicant for, or holder of, the POA

b) include the facilities outside the Member States in the terms of approval of the EASA Form 55 (see Annex I Part 21 Appendix X) when issuing the POA.

Partners/suppliers/sub-contractors located in a third country

The competent authority should define on the basis of Part 21, its associated CS and GM, a clear procedure on supplier control. This procedure should include the control of partners/suppliers/sub-contractors of the applicant for, or holder of, a POA that are located outside the Member States.

In respect of the applicant for, or holder, of the POA, the competent authority should:

1) investigate, for the initial approval and consequent continued surveillance, the production organisation, and its partners/suppliers/sub-contractors at the necessary level to ensure the organisation can comply with the requirements of Part 21,

2) in accordance with the competent authority procedure, assess and accept the documented procedure for supplier control as part of the POA holder's quality system, and changes to that procedure prior to implementation,

3) in accordance with competent authority procedure, assess the necessary level of surveillance to be exercised by the production organisation on partners / suppliers / sub-contractors and check the audit plan of the production organisation against this level.

The level of co-operation between the competent authority and the competent authority of the third country where a partner/supplier/sub-contractor of the production organisation is located may influence the authorities' activities concerning this partner/supplier/sub-contractor. Co-operation with the competent authority of the third country should be based on the capability and goodwill of that authority, and a complete interchange of necessary information.

The involvement of this competent authority of the third country in the surveillance of the partner/supplier/sub-contractor will be based on the following principles:

- When a recognition agreement under Article 12 of Regulation (EC) No 216/2008 covering production subjects has been concluded:
  a) The competent authority in accordance with GM No. 2 to 21.A.139(a) may decide that direct surveillance of the POA holder activities at the foreign location may not be necessary.
  b) In any other case, provisions of the recognition agreement on the subject apply (technical assistance, ...).
- If a recognition agreement has not been concluded, or it does not cover production subjects, it may be necessary that the competent authority of the Member State, the Agency, and the competent authority of a third country enter into a specific working arrangement addressing the following matters:
  a) acceptance by the competent authority of the third country of conducting manufacturing surveillance of the relevant production activities on behalf of the competent authority, under the respective quality standards defined by the competent authority.
  b) tasks to be performed
  c) practical methods

These arrangements are between authorities and do not relieve the applicant of its obligations.

- In all cases, even though surveillance tasks are delegated to the competent authority of the third country, the competent authority remains the responsible authority and may consequently exercise direct surveillance if necessary.
- In case that it is not possible to delegate surveillance tasks to the competent authority of the third country, the competent authority will have to establish a direct surveillance program in accordance with its procedure concerning supplier control as part of the overall surveillance of the POA holder.

GM No. 4 to 21.B.220(c) Procedures for investigation - Competent authority surveillance of suppliers of a POA holder located in other Member States

21.B.220(c)

1. The aviation legislation identifies specific State obligations in relation to complete products:
   State of manufacture, as used in ICAO Annex 8, normally identifies the country where the final assembly and the final determination of airworthiness is made. However, sub-assemblies and parts may be produced by POA holders in other countries and the EASA Form 1 - Authorised Release Certificate will identify those countries as the location for production.
   Among Member States the obligations of the State of manufacture may be discharged through the use of the Part 21 POA system.
   According to Part 21 Subpart G, each POA holder must have established and documented in its POE a system for its own control of suppliers/supplies. Surveillance of this system is part of the responsibility of the competent authority of the POA holder wherever the suppliers are located.
   This surveillance may be exercised through the POA holder and/or at supplier level especially in the cases where the supplier would be eligible for its own POA.
   The purpose of this procedure is to ensure the completeness of the responsibilities chain so that no separate technical agreement between these national authorities is necessary and when necessary to establish a means of communication between the involved competent authorities of the Member States.
2. Principle to organise competent authority supplier surveillance between Member States:

In order to avoid duplication and to take the best advantage of Regulation (EC) No 216/2008 that establishes under Article 11 mutual recognition of certificates issued by production organisations approved in accordance with Part 21 Section A Subpart G by an Member State, the principle for the competent authority surveillance of the suppliers of a POA holder located in other Member States is for the responsible competent authority to delegate surveillance activity to the other competent authority of the supplier.
This applies between Member States and for suppliers holding a Part 21 POA.
Delegation of surveillance tasks does not imply a delegation of the overall responsibility, therefore the competent authority of the contractor always retains the right of direct supervision at the supplier location especially when serious quality problems are encountered. In such a case, co-ordination will be organised between both competent authorities.
This delegation of surveillance is to be considered automatic as soon as the supplier holds a Part 21 POA provided that the intended supply is included in the approved scope of work. Evidence of that approval will normally be found through the release of the supplied parts with an EASA Form 1. In addition, the competent authority of the supplier should immediately inform the competent authority of the contractor in case of a serious quality problem.
In the cases where the competent authority of the contractor considers that it is necessary to establish closer ties with the competent authority of the supplier (i.e., critical or significant parts) exchange of information between the competent authorities should be organised as follows:

2.1 Tasks of the competent authority of the POA contractor

The competent authority of the contractor should inform in writing the competent authority of the sub-contractor with the following:

a. Identification (and location) of the contractor
b. Identification (and location) of the sub-contractor
c. Identification of the subcontracting (parts, contract N°, etc.)
d. Reference to the quality requirements attached to the contract
e. Name and address of the competent authority office/person in charge of the POA
f. Whether Direct Delivery Authorisation (DDA) applies
g. Any specific action item/requirement from the competent authority
h. Request for a bi-annual reporting (both ways).

EASA Form 58A is provided for convenience of the competent authority for this purpose.
The competent authority of the contractor should require that the contract/order from the contractor to the sub-contractor should indicate that it is placed under the surveillance of its competent authority on behalf of the competent authority of the contractor and should address the subject to the payment of the possible surveillance fees.

2.2 Tasks of the competent authority of the supplier (sub-contractor)

On receipt of the information from the competent authority of the contractor, the competent authority of the sub-contractor should:

- Verify that the scope of work of the POA of the supplier covers the intended supply (or envisage to extend it in liaison with the supplier).
- Verify that the specific quality requirements for the parts have been introduced in the quality system of the supplier.
- Confirm to the competent authority of the contractor that the procurement is included in the POA of the supplier and that their surveillance will cover this activity.
- Indicate the name and address of the competent authorities office/person in charge of the POA.

If the supplier has no POA under Part 21, or does not want to extend it, and/or if its competent authority cannot conduct surveillance on behalf of the other competent authority, the competent authority of the supplier will inform the competent authority of the contractor in order for it to decide on appropriate actions.

2.3 Exchange of information between the competent authorities

This information should normally take two forms:

- Immediate exchange of information between both competent authorities in case of serious quality problems;
- A bi-annual exchange of information at a given date in order to guarantee proper on going control of the subcontract by both competent authorities.

This information should cover in a concise form:

a) For the competent authority of the contractor:
- A resume of the quality problems encountered by the contractor, on receipt inspection, on installation on aircraft or on in service aircraft;
- A status of the reference documents.

b) For the competent authority of the sub-contractor:
- A resume of at least the following subjects:
  - Changes in organisation and qualification of the sub-contractor.(in case of impact on the procurement),
  - Quality problems encountered during manufacture,
  - Corrective actions following problems encountered earlier on the procurement,
  - Findings from national authorities surveillance that may have an impact on the procurement,
  - Quality problems related to the contractor procurement (materials, documentation, procedures, processes).

Exchange of information between national authorities according to this procedure is strictly confidential and should not be disclosed to other parties.

It is recommended to plan at least every 5 years a meeting between Industry and the two national authorities to review each major subcontract to verify proper management by the various parties involved.

3. Miscellaneous

a) Release documentation

Release of parts by the POA sub-contractor to the contractor will be accompanied by an "Authorised Release Certificate EASA Form 1" issued for "Airworthiness" or for "Conformity" as appropriate.

b) Sub-subcontracting

If the sub-contractor wants itself to subcontract, it is up to the competent authority of the sub-contractor to verify that this is done in accordance with the conditions of the contract, to organise as necessary the related authority surveillance and to inform the competent authority of the contractor.

c) Language

Except if agreed otherwise it is recommended to use the English language for exchange of information between the competent authorities.

Competent authority of an EU Member State or EASA REQUEST FOR REPORTING ON SUB-CONTRACTOR SURVEILANCE	
Document reference number:	<REQUEST REF. NO.>
As competent authority which issued a POA to:	<CONTRACTOR COMPANY>
With approval reference:	<CONTRACTOR POA REF. NO..>
The <COMPETENT AUTHORITY> has determined that there is a need for direct authority supplier surveillance of:	<SUB-CONTRACTOR COMPANY>
With approval reference:	<SUB-CONTRACTOR POA REF.NO.>
Which is situated in:	<COUNTRY OF SUB-CONTRACTOR COMPANY>
As part of the surveillance as required for the Part 21 Section A Subpart G approved production organisation, according to GM No. 4 to 21.B.220(c) the competent authority of the sub-contractor is requested to perform authority surveillance on the specific sub assemblies and parts as details and requirements are defined below.	
Identification of subcontracting (parts, contract No., …):	

Reference to the quality requirements attached to the contract between contractor and sub-contractor:	
Name and address of the requesting competent authority office/person in charge of the POA:	
Direct Delivery Authorisation (DDA) applies:	☐ Yes ☐ No
Specific action item/requirement from the competent authority of the contractor:	
Request and details required for a bi-annual reporting (both ways) according to GM No. 4 to 21.B.220(c) (Strict confidentiality to be observed):	
Name and signature of competent authority person making the request:	
Competent authority office: Date:	

EASA Form 58A - Request for reporting on sub-contractor surveillance, Page x of x

Competent authority of an EU Member State or EASA REPORT ON SUB-CONTRACTOR SURVEILLANCE	
Document reference number:	<REPORT REF. NO.>
Reporting request reference number:	< REQUEST REF. NO >
As responsible competent authority the <COMPETENT AUTHORITY> issued a POA to and is performing direct authority surveillance of:	<SUB-CONTRACTOR COMPANY>
With approval reference:	<SUB-CONTRACTOR POA REF. NO..>
Which is a subcontracted supplier of:	<CONTRACTOR COMPANY>
With approval reference :	<CONTRACTOR POA REF.NO.>
Which is situated in:	<COUNTRY OF CONTRACTOR COMPANY>
According to GM No. 4 to 21.B.220(c) and on request of the competent authority of the contractor company the <COMPETENT AUTHORITY> reports on the results of its authority surveillance on the specific parts and appliances defined below:	
Identification of subcontracting (parts, contract No., …):	
Identification of attachments to this report (if needed):	
Date and identification of previous report:	
Resume of surveillance results:	
Changes in organisation and qualification of the sub-contractor. (in case of impact on the procurement):	
Quality problems encountered during manufacture:	
Corrective actions following problems encountered earlier on the procurement:	
Findings from competent authority surveillance that may have an impact on the procurement:	
Quality problems related with the contractor procurement (materials, documentation, procedures, processes):	

Note: Exchange of information between national authorities according to this procedure is strictly confidential and should not be disclosed to other parties.
Name and signature of competent authority person reporting:
Competent authority office: Date:

EASA Form 58B - Report on sub-contractor surveillance, Page x of x

<2012/020/R Corrigendum typo in references>

GM 21.B.225(a) Objective evidence

21.B.225(a)

Objective evidence is a fact which is, or can be documented, based on observations, measurements or tests that can be verified. Objective evidence generally comes from the following:

a) documents or manuals
b) examination of equipment/products
c) information from interview questions and observations of POA activities.

AMC 21.B.225(a) Notification of findings

21.B.225(a)

In case of a level one finding confirmation must be obtained in a timely manner that the accountable manager received the letter containing details of the level one finding and the approval suspension details.

A level two finding requires timely and effective handling by the competent authority to ensure completion of the corrective action. This includes intermediate communication, including reminding letters as necessary, with the POA holder to verify that the corrective action plan is followed.

AMC No. 1 to 21.B.230 Issue of the certificate

21.B.230

The competent authority should base its decision to issue or amend a POA on the recommendation report (EASA Form 56, see GM No.2 to 21.B.220(c)) of the POAT submitted by the POA team leader. The EASA Form 56 includes a proposal by the POAT for the scope and terms of approval defining the products, parts and appliances for which the approval is to be granted, with appropriate limitations.

When the competent authority issues the approval a final controlled copy of an acceptable exposition for the organisation should have been supplied to the competent authority.

In some cases it may be accepted that some findings are not fully closed because corrective actions are still in progress. The competent authority may decide according to the following principles:

1) Findings should be equivalent to level two, which do not need to be rectified as a matter of urgency within less than three months, and should normally not exceed three in number.
2) Corrective action plan, including timescales, should have been accepted and should not require an additional and specific follow-up audit by the competent authority.

A record should be kept by the competent authority and should be brought to the attention of the Agency on request for standardisation purposes.

GM-ELA No 1 to 21.B.230 Issue of certificate

21.B.230

The terms of approval, which identify the products or the categories of parts and appliances, or both, for which the holder is entitled to exercise their privileges, will be described by the competent authority using standard terms, as follows:

Starts with selection of:	…continues with selection from:	…ends with:
Manufacturing of	aeroplanes that are within the scope of CS-LSA, CS-VLA and CS-23 level 1, not classified as complex motor-powered aircraft,	where <company> holds the type design approval, including all related spare parts.

Manufacturing of engines used on	sailplanes or powered sailplanes that are within the scope of CS-22,	
Manufacturing of propeller used on	balloons,	
	hot-air airships,	
	gas airships that comply with 3 % maximum static heaviness, non-vectored thrust (except reverse thrust), conventional and simple design of structure, control system and ballonet system, and non-power-assisted controls,	

The type and the model should not be listed within the terms of approval. They are provided within the company's manual (or the equivalent documentation).

Changes to the list of types and models are not, in themselves, considered to be changes in the scope of work, and they should be coordinated with the competent authority.

If the scope of work is related to a restricted type design in which the approval of the engine and/or the propeller is included in the aircraft type design, the work associated with these engines and/or propellers is included in the scope of work related to the aircraft. A separate scope related to the engine and/or the propeller is not required.

AMC-ELA No 1 to 21.B.235 Continued surveillance

21.B.235

The competent authority should determine whether there is continued conformity to the type design by assessing:

1. the adherence of the company to the procedures laid out in the quality system that is referenced by the POE; and
2. a representative number of sample products at various stages of production.

Surveillance activities are:

1. planned activities to a schedule that are adequate for the size, product range and production rate of the company, so as to ensure that there is a complete review within 24 months. To obtain the required complete review of the production organisation within 24 months, all the relevant stages of production should be audited once within this 24-month period;
2. unplanned activities in response to unsafe situations that may be caused by a problem in the production organisation, and that are significant enough to require a detailed assessment that cannot be delayed until the next scheduled surveillance event.

GM-ELA No 1 to 21.B.235 Continued surveillance

21.B.235

A sampling plan in support of the planned surveillance activity could, for example, include:

- a (part of the) product with the modification (or change) incorporated;
- the installation, testing, or operation of a major part or system;
- the accuracy and the generation of the flight test report data;
- the accuracy and the generation of the weighing report data;
- an engine test bed run;
- the traceability of production records as defined from the type design;
- the accuracy and the generation of the statement of conformity data, and the associated determination of safe operation;
- the accuracy and generation of the EASA Form 1 data.

It is recommended that flexibility should be allowed in the sampling plan so as to:

- accommodate changes in the rate of production;
- make use of results from other samples;
- make use of results from other POA investigations;
- provide the maximum confidence to the national authorities.

GM 21.B.235(a)(4) Guide to the conduct of monitoring production standards.

21.B.235(a)(4)

1. 21.B.235(a)(4) identifies a need for a sample investigation of products, parts or appliances, their associated conformity determinations and certifications made by a POA holder. For this to be performed effectively and efficiently, the competent authority should integrate a sampling plan as part of the planning of the investigation and continued surveillance activities appropriate to the scope and size of the relevant applicant.
2. The sampling plan could, for example, investigate:
   - a modification (or change)
   - the installation, testing, or operation of a major part or system
   - the accuracy and generation of the Flight Test report data
   - the accuracy and generation of the Weighing report data
   - an engine test bed run
   - records traceability
   - the accuracy and generation of the Statement of Conformity data and the associated safe operation determination
   - the accuracy and generation of EASA Form 1 data.
   - The sampling plan should be flexible so as to:
   - accommodate changes in production rate
   - make use of results from other samples
   - make use of results from other POA Investigations
   - provide the maximum national authorities confidence

   To be effective this product sample requires that the individual investigator(s):
   - have a good practical knowledge of the product, part or appliance
   - have a good practical knowledge of the manufacturing processes
   - have an up to date knowledge of the manufacturers production programme
   - use an appropriate and up to date sample plan and compliance check lists
   - have a suitable recording system for the results
   - have a properly operating feedback system to their national authorities organisation for POA and the manufacturer
   - maintain an effective working relationship with the manufacturer and his staff
   - be able to communicate effectively.

GM 21.B.235(b) Maintenance of the POA - Work allocation within the competent authority

21.B.235(b)

After issue of the approval the competent authority should appoint a suitable member of its technical staff as the POATL to be in charge of the approval for the purpose of continued surveillance.

Where the POA holder facilities are located in more than one Member State the competent authority of the State of manufacture will liaise with the competent authorities of the various partners/members to ensure appropriate continued surveillance.

GM 21.B.235(b) and (c) Continued surveillance

21.B.235(b)
21.B.235(c)

Continued surveillance consists of:

1. Planned continued surveillance, in which the total surveillance actions are split into several audits, which are carried out at planned intervals during the validity period of the production organisation approval. Within the continued surveillance one aspect may be audited once or several times depending upon its importance.
2. Unplanned POA reviews, which are specific additional investigation of a POA holder related to surveillance findings or external needs. The competent authority is responsible for deciding when a review is necessary taking into account changes in the scope of work, changes in personnel, reports on the organisation performance submitted by other EASA or national authorities teams, reports on the in service product.

AMC 21.B.235(c) Continuation of POA

21.B.235(c)

At the end of the 24 months continued surveillance cycle the POATL responsible for the POA should complete an EASA Form 56 (see GM No.2 to 21.B.220(c)) as a summary report for the continued surveillance including the recommendation for continuation of the POA as applicable. The EASA Form 56 should be countersigned by the person responsible within the competent authority for his acceptance. At this stage there is no limitation to the number of level two findings that may be open, provided they are within the time limits of the respective corrective action plans.

AMC No. 1 to 21.B.240 Application for significant changes or variation of scope and terms of the POA

21.B.240

The competent authority must receive an application for significant changes or variation of scope and terms of the POA on an EASA Form 51 (see below) completed by the applicant.

EASA Form 51 **Application for significant changes or variation of scope and terms of Part 21 POA**	
Competent authority **of an EU Member State or** **EASA**	
1.Name and address of the POA holder:	
2.Approval reference number:	
3.Locations for which changes in the terms of approval are requested:	
4.Brief summary of proposed changes to the activities at the item 3 addresses:	
a) General:	
b) Scope of approval:	
c) Nature of privileges:	
5.Description of organisational changes:	
6.Position and name of the accountable manager or nominee:	
Date	Signature of the accountable manager (or nominee)

EASA Form 51

Block 1: The name must be entered as written on the current approval certificate. Where a change in the name is to be announced state the old name and address here, while using Block 5 for the information about the new name and address. The change of name and/or address must be supported by evidence, e.g. by a copy of the entry in the register of commerce.

Block 2: State the current approval reference number.

Block 3: State the locations for which changes in the terms of approval are requested or state 'not applicable' if no change is to be anticipated here.

Block 4: This Block should include further details for the variation of the scope of approval for the addresses indicated in Block 3. The Block 'General' must include overall information for the change (including changes e.g. in workforce, facilities etc.), while the Block 'Scope of approval' must address the change in the scope of work and products/categories following the principles laid down in the GM 21.A.151. The Block 'nature of privi-

leges' must indicate a change in the privileges as defined in 21.A.163(b)-(d). State 'not applicable' if no change is anticipated here.

Block 5: This Block must state the changes to the organisation as defined in the current production organisation exposition, including changes the organisational structure, functions and responsibilities. This Block must therefore also be used to indicate a change in the accountable manager in accordance with 21.A.145(c)(1) or a change in the nomination of the responsible managers in accordance with 21.A.145(c)(2). A change in the nomination of responsible managers must be accompanied by the corresponding EASA Forms 4. State 'not applicable' if no change is anticipated here.

Block 6: State the position and name of the accountable manager here. Where there is a change in the nomination of the accountable manager, the information must refer to the nominee for this position. State 'not applicable' if no change is anticipated here.
In case of an application for a change of the accountable manager the EASA Form 51 must be signed by the new nominee for this position. In all other cases the EASA Form 51 must be signed by the accountable manager.

AMC-ELA No 1 to 21.B.240 Amendment of a production organisation approval

21.B.240

The competent authority should conduct adequate investigations in accordance with AMC-ELA No 1 to 21.B.220(c) prior to an amendment of the POA that is classified as a significant change. Refer to GM-ELA No 1 to 21.A.147. Minor changes are monitored by the competent authority in the course of the regularly scheduled surveillance activities.

AMC-ELA No 1 to 21.B.245 Suspension and revocation of a production organisation approval

21.B.245

If there is a level 1 finding and the competent authority intends to limit the production organisation approval (POA), the competent authority should not limit the possibility for the manufacturer to issue or release conformity certificates unless it is absolutely necessary to do so. In that case, the competent authority may apply conditions for the issue or release of conformity certificates.

GM 21.B.245 Continued validity

21.B.245

1. GENERAL
Decisions on restriction, surrender, suspension or revocation of POA will always be actioned in such a way as to comply with any applicable national laws or regulations relating to appeal rights and the conduct of appeals, unless the decision has been taken by the Agency. In such case, the Agency appeal procedures will apply.
2. RESTRICTION is temporary withdrawal of some of the privileges of a POA under 21.A.163.
3. SURRENDER is a permanent cancellation of a production organisation approval by the competent authority upon formal written request by the accountable manager of the organisation concerned. The organisation effectively relinquishes its rights and privileges granted under the approval and, after cancellation, may not make certifications invoking the approval and must remove all references to the approval from its company documentation.
4. SUSPENSION is temporary withdrawal of all the privileges of a production organisation approval under 21.A.163. The approval remains valid but no certifications invoking the approval may be made while the suspension is in force. Approval privileges may be re-instated when the circumstances causing the suspension are corrected and the organisation once again can demonstrate full compliance with the Requirements.
5. REVOCATION is a permanent and enforced cancellation of the whole of an approval by the competent authority. All rights and privileges of the organisation under the approval are withdrawn and, after revocation, the organisation may not make any certifications or other statements invoking the approval and must remove all references to the approval from its company documentation.

AMC 21.B.245 Corrective action plan

21.B.245

It is expected that any established POA holder will move quickly to re-establish compliance with Part 21 and not risk the possibility of approval suspension. Therefore, the corrective action period granted by the competent authority must be appropriate to the nature of the finding but in any case initially must not be more than six months. In certain circumstances and subject to the nature of the finding the competent authority can vary the six months period subject to a satisfactory corrective action plan agreed by the competent authority.

Failure to comply within time scale agreed by the competent authority means that provisional suspension of the POA in whole or in part must proceed.

Subpart H - Airworthiness certificates and restricted certificates of airworthiness

GM 21.B.320(b)(6) Investigation

21.B.320(b)(6)

1. Determination of necessary conditions, restrictions and/or limitations on the airworthiness certificate issued by a Member State

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 that result from the investigation by the Agency 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 instruction or comparable document and should be referenced in Block 5 (limitations/remarks) of the appropriate certificate of airworthiness.

GM 21.B.325(a) Airworthiness certificates

21.B.325(a)

1. Completion of the certificate of airworthiness by a Member State

Block 5: Insert restrictions developed in accordance with Part 21, including any reference to limitations as indicated in GM 21.B21.B.320(b)(6).

2. Completion of the restricted certificate of airworthiness by a Member State

Block 5: Insert restrictions developed in accordance with Part 21, including any reference to limitations as indicated in GM 21.B.320(b)(6).

GM 21.B.325(b) Completion of the Airworthiness Review Certificate by a Member State

21.B.325(b)

1 Purpose

In accordance with the applicable continuing airworthiness requirements a certificate of airworthiness is valid only if a valid airworthiness review certificate is attached to it. For new aircraft, the competent authority will issue the airworthiness review certificate when issuing the certificate of airworthiness.

Subpart I - Noise certificates

GM 21.B.425(a) Noise certificates

21.B.425

1. Completion of the noise certificate by a Member State

1.1 Completion instructions

Block 1. State of registry

The name of the State issuing the noise certificate. This item should match the corresponding information on the certificate of registration and certificate of airworthiness.

Block 2. Noise certificate

The title of the EASA Form 45 is 'Noise Certificate'

Block 3. Document No

A unique number, issued by the State of registry that identifies this particular document in their administration. Such a number will facilitate any enquiries with respect to the document.

Block 4. Registration marks

The nationality or common mark and registration marks as issued by the State of registry in accordance with Annex 7 to the Chicago Convention[1]. This item should match the corresponding information on the certificate of registration and certificate of airworthiness.

Block 5. Manufacturer and manufacturer's designation of aircraft

The type and model of the subject aircraft. This item should match the corresponding information on the certificate of registration and certificate of airworthiness.

Block 6. Aircraft serial No

The aircraft serial number as given by the manufacturer of the aircraft. This item should match the corresponding information on the certificate of registration and certificate of airworthiness.

Block 7. Engine

The designation of the installed engine(s) for identification and verification of the aircraft configuration. It should contain the type and model of the subject engine(s). The designation should be in accordance with the type certificate or supplemental type certificate for the subject engine(s).

Block 8. Propeller

The designation of the installed propeller(s) for identification and verification of the aircraft configuration. It should contain the type and model of the subject propeller(s). The designation should be in accordance with the type certificate or supplemental type certificate for the subject propeller(s). This item is included only in noise certification documentation for propeller driven aeroplanes.

Block 9. Maximum take-off mass (kg)

The maximum take-off mass associated with the certificated noise levels of the aircraft in kilograms. The unit (kg) should be specified explicitly in order to avoid misunderstanding. If the primary unit of mass for the State of manufacture of the aircraft is different from kilograms, the conversion factor used should be in accordance with Annex 5 to the Chicago Convention.

Block 10. Maximum landing mass (kg)

The maximum landing mass associated with the certificated noise levels of the aircraft in kilograms. The unit (kg) should be specified explicitly in order to avoid misunderstanding. If the primary unit of mass for the State of manufacture of the aircraft is different from kilograms, the conversion factor used should be in accordance with Annex 5 to the Chicago Convention. This item will only be included in the noise certification documentation for noise certificates issued under Chapter 2, 3, 4, 5, 12 and 14.

Block 11. Noise certification standard

1.The Convention on International Civil Aviation on 7 December 1944

The chapter to which the subject aircraft is noise certificated. For Chapters 2, 8, 10 and 11, the section specifying the noise limits should also be included.

Block 12. 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 meet the requirements of the chapter to which the aircraft is certificated as given under Block 11.Other modifications that are not essential to meet the stated chapter but are needed to attain the certificated noise levels as given may also be included at the discretion of the certificating authority. The additional modifications should be given using unambiguous references, such as supplemental type certificate (STC) numbers, unique part numbers or type/model designators given by the manufacturer of the modification.

Block 13. Lateral/full-power noise level

The lateral/full-power noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB) of the noise level and the noise level should be stated to the nearest tenth of a decibel (dB). This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5, 12 and 14.

Block 14. Approach noise level

The approach noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5, 8, 12, 13 and 14.

Block 15. Flyover noise level

The flyover noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5, 12 and 14.

Block 16. Overflight noise level

The overflight noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB or dB(A)) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 6, 8, 11 and 13. For tilt-rotors certificated according to Chapter 13 only the overflight noise level established in vertical take-off and landing (VTOL)/conversion mode needs to be stated.

Block 17. The take-off noise level

The take-off noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB or dB(A)) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 8, 10 and 13.

Block 18. Statement of compliance, including reference to Annex 16 to the Chicago Convention, Volume I

The statement is provided in EASA Form 45.

Block 19. Date of issue

The date on which the document was issued.

Block 20. Signature

The signature of the officer issuing the noise certificate. Other items may be added such as seal, stamp etc.

Additional information:

1. Logo and name of the issuing authority

   In order to facilitate recognition the logo or symbol and the name of the issuing authority may be added in the box 'For use by the State of registry'.

2. Language

   States issuing their noise certification documentation in a language other than English should provide an English translation.

<ED Decision 2016/003/R, minor typos, added some references>

Subpart P - Permit to fly

AMC 21.B.520(b) Application for a permit to fly

21.B.520(b)

The competent authority must receive an application for permit to fly in a form and manner established by that authority, e.g. on EASA Form 21 (see below) completed by the applicant.

Application for Part 21 Permit to Fly	
1.Applicant:	[Name of applicant]
2.Aircraft nationality and identification marks:	
3.Aircraft owner:	
4.Aircraft manufacturer/type	5. Serial number
6.Purpose of flight [Use terminology of 21.A.701(a) and add any additional information for accurate description of the purpose, e.g. place, itinerary, duration…] [For an application due to a change of purpose (ref. 21.A.713): reference to initial request and description of new purpose]	
7.Expected target date(s) for the flight(s) and duration	
8.Aircraft configuration as relevant for the permit to fly 8.1The above aircraft for which a permit to fly is requested is defined in [add reference to the document(s) identifying the configuration of the aircraft. Same as required in AMC 21.A.263(c)(6) or AMC 21A.21.A.709(b) application approval form 18A or 18B, box 6] 8.2 The aircraft is in the following situation related to its maintenance schedule: [Describe status]	
9.Approval of flight conditions [if not available at the time of application, indicate reference of request for approval] [Reference to: 1.EASA approval, if flight conditions are approved by EASA; or 2.DOA approval form (see AMC 21.A.263(c)(6)), if approved under DOA privilege; or 3.Competent authority approval.	
10.Date:	11.Name and signature: [Authorised signatory]

EASA Form 21

Appendixes

GM No 1 to Appendix XII to Part-21

Appendix XII

Lead Flight Test Engineer (LFTE)

LFTEs are Flight Test Engineers (FTEs) that have specific duties and privileges as a flight test crew member, to operate the test aircraft's systems either directly or through dedicated flight test instrumentation, that could significantly interfere with the aircraft basic systems (such as flight controls and engine controls), or that could significantly impact aircraft stability and control (e.g. through weight and balancing flight management or flight control configuration changes). As an example, an LFTE could be permitted to shut down the engines or change the engine parameters through controls which are not accessible to the pilots.

The word 'assisting' (the pilots) should be understood in the sense of the critical actions (e.g. actions described above) which could be performed by the LFTE, if requested by the flight test order and agreed by the pilot-in-command.

Flight test categories

The purpose of this GM is to help operators to:

- determine whether an operation is a flight test; and
- to classify the flight test.

Flight test categories are defined in Appendix XII to Part-21, and are described in this GM in such a manner that an operator who wishes to classify a flight, should first determine whether the flight is defined as a flight test according to the 'General' paragraph. The operator should then determine if the flight test falls within the definition of Category 1 before moving to Category 2 and so on throughout the list until the correct category is determined.

Other types of flights, such as maintenance check flights, are not included in the flights described in this GM and are, therefore, not subject to it.

a) General

The testing of aircraft performance, handling qualities and systems, including checking compliance with Certification Specifications (CSs), requires specialist techniques, skills and theoretical knowledge.

Therefore, flight test training and specific experience is required to enable a test crew to:

- safely perform systematic and comprehensive flight envelope exploration;
- acquire specific skills and abilities for some particularly difficult tests;
- mitigate risks by anticipating potentially hazardous situations, and by applying methods that permit the safest flight possible in these situations;
- understand the relevant CSs; and
- learn methods to assess whether the aircraft or its systems comply with these regulations.

It should be noted that the content of the flight test determines its category, and the flight test category determines the required competence of the crew.

Nevertheless,

- flight tests of an aircraft which does not have a Type Certificate (TC) should be considered either as Category 1 or Category 2 flight test until the type has been certified; and
- flight tests for a modification of an already certified type may be Category 1, 2 or 4, depending on the purpose of the test.

The rationale for this difference is the fact that a new aircraft type is considered under continuous assessment until the TC is issued.

Cases where more than one aircraft is involved in a flight test point:

Chase flights are a typical example of flights in which more than one aircraft is involved. Every aircraft participating in the test point(s) should be evaluated through this classification. The guiding principle should be the role of the crew of the chase aircraft in the safety of the aircraft under test or of the formation.

b) Category 1 flight test

Below are examples of flight tests to be considered as Category 1:

- Fixed-wing aircraft: VMCG, VMU, spinning, initial stalling, or for rotary-wing aircraft: H/V diagrams and Category A engine failures.

- Where encounter of surprising or even hazardous flight characteristics can be expected.
- Upon determination, aircraft handling and performance in conditions where at least one of the following parameters is approaching the actual limits of the aircraft envelope: altitude, attitudes, weights, CG, speed/ Mach, stalls, temperature, engine and aerofoil performance.
- Where the embodiment of new systems is anticipated to significantly affect the aircraft's handling or performance characteristics.
- When the crew of the chase aircraft has the duty to assist the test aircraft crew in recovering from a critical flight situation (i.e. assist the spinning aircraft crew in assessing the spin or triggering recovery actions).

c) Category 2 flight test

Below are examples of flight tests to be considered as Category 2:

- The flight test envelope has already been opened and it has been demonstrated that the general behaviour of the aircraft is adequately safe and there are no unsafe flight characteristics.
- All-engines-operating climb performance.
- Cruise performance.
- Static stability demonstration.
- Function and reliability flights.
- Systems tests of autopilot or guidance/warning systems such as Terrain Awareness and Warning System (TAWS) or Airborne Collision Avoidance System (ACAS), when the modes themselves are tested, requiring operating the aircraft by deviating from the standard operational procedures. Additionally, in the case of embodiment of such systems on an already certified aircraft, when the system integration in an existing cockpit requires a more global crew procedure assessment - for example, when the system has been integrated in cockpit screens and a centralised warning system which requires a new cockpit procedure assessment (note that some system tests may fall under Category 4; see below).

d) Category 3 flight test

These flights are commonly referred to as production flight tests. They are performed on each new aircraft of a type that is already certified. The aim is to check that the aircraft and its systems are working properly and conform to the certified type. As the type is already certified, the behaviour of the aircraft is known.

However, experience has shown that during production flight tests of a new aircraft, unexpected failures can occur which could not be described in the Aircraft Flight Manual (AFM). For this reason, it is considered that special experience should be required.

It should be noted that a TC or a Supplemental Type Certificate (STC) should have been issued in order for a production flight test to be considered as Category 3. Until a TC or STC is issued, any flight, including production flight tests, will be Category 1, 2 or 4 according to classification criteria.

It should be noted also that if the flight of an aircraft with a TC or STC requires flying outside the AFM limitations, then this flight should be considered as Category 1 or Category 2 flight.

e) Category 4 flight test

Typical Category 4 flights are those required by a DOA to demonstrate compliance with the airworthiness requirements of 'not yet approved data':

- cabin conversion;
- zonal drying system installation;
- Emergency Locator Transmission (ELT) installation;
- new cabin installation;
- cabin aircraft location pictorial system installation;
- new entertainment system installation;
- SATCOM and telephone installation; and
- new radio equipment installation.

Category 4 includes also flights after embodiment of guidance/warning systems which are not Category 2 and for which:

- good functioning test only is required; and
- there is no need to fly the aircraft outside the AFM limitations.

The modification should not affect the behaviour of the aircraft in any way.

However, there may be modifications whose tests, despite the fact that they have no influence on the behaviour of the aircraft, require flying in conditions which deviate significantly from the standard operational use of the aircraft. These unusual flight test conditions may require classifying the flight as Category 2, as mentioned above. The typical example to consider here is the approval of the modification of an already certified TAWS system. In this situation, it is required to fly at very low altitude and/or towards high terrain. Such a flight can be classified as Category 4 flight on a light aircraft (or helicopter) because that flight test is performed in a domain corresponding to the normal operation of the aircraft, whereas the same flight performed with a heavy CS-25 aircraft, especially if it needs to be flown in clean configuration significantly below gear and flaps warning heights, should be classified as Category 2 because such a flight does not correspond to the normal use of the aircraft and needs to adopt specific testing procedures as demonstrated in the Category 2 training.

<ED Decision 2015/026/R new AMC/GM>

GM No. 2 to Appendix XII to Part-21
Competence and experience of pilots for Category 3 and Category 4 flight tests and of Lead Flight Test Engineers (LFTEs)

Appendix XII

Definition of similar 'complexity and characteristics':

Similar 'complexity and characteristics' for aircraft can normally be assumed for aircraft of the same category and in the same class, and certified under the same CSs, e.g. CS-23/CS-25. However, it could be considered that aircraft certified under different CSs but having small difference in weight and operating procedure (e.g. Citation 525/Citation 550, 560) have similar complexity and characteristics.

Flight experience of LFTEs:

The flight experience includes experience as a crew member in flight tests or other flights (e.g. flights as a student pilot or with a pilot licence).

<ED Decision 2015/026/R new AMC/GM>

AMC No. 1
Training courses for Lead Flight Test Engineers (LFTEs)

Appendix XII

GENERAL

1. Competency-based training
   - 1.1. LFTE training courses should be competency-based. The training programme should, as much as possible, follow the syllabus outlined below, but may be adapted taking into account the previous experience, skills and theoretical knowledge level of the students.
   - 1.2. It should also be recognised that the syllabus below assume that suitable flight test experience will be gained subsequent to course attendance. Should the student be significantly experienced already, then consideration should be made of that experience and it is possible that the course content might be reduced in areas where that experience has been gained.
   - 1.3. Furthermore, it should be noted that LFTE courses are generally specific both to a certain category of aircraft (aeroplanes or helicopters) and to a certain category of flight test (Category 1 or 2). Therefore, an LFTE wishing to extend their privileges to further categories of aircraft or to further categories of flight test (this is only relevant for someone having already undertaken a Category 2 course) should not be requested to undertake the same course as an 'ab initio applicant'. In these cases, the organisation providing the training should develop specific 'bridge courses' taking into account the same principles mentioned above. Additionally, where applicable, if the training courses do not include instruction on a CS-25 or CS-29 (or equivalent airworthiness codes) aircraft, the instruction differences for a LFTE with duties on a CS-23 or CS-27 aircraft wishing to extend their privileges to a CS-25 or CS-29 (respectively) aircraft, should be addressed. If needed, bridge courses should be developed, taking into account the principles above.
   - 1.4. To allow proper consideration of the student's previous experience, a pre-entry assessment of the student's skills should be undertaken on the basis of which the organisation providing the training may evaluate the level of the applicant in order to better tailor the course. Consequently, the syllabi listed below should be regarded as a list of individual demonstrable competencies and qualifications rather than a list of mandatory training objectives.

2. Continuous evaluation

2.1. Training courses should be built on a continuous evaluation model in order to ensure that successful completion of the course ensures that the student has reached the level of competence (both theoretical and practical) necessary to carry on their functions.

COURSE CONTENT

3. In addition, the content of the course should vary taking into account whether the student wants to undertake a Category 1 or Category 2 flight test, as well as the relevant category of aircraft, and their level of complexity. In order to better take these factors into account, LFTE training courses have been divided into levels similar to those for the pilot flight test rating.

3.1 Competence Level 1 courses apply to Category 1 flight tests on:

a. helicopters certified in accordance with the standards of CS-27 or CS-29 or equivalent airworthiness codes;

b. aeroplanes certified in accordance with:

(i) the standards of CS-25 or equivalent airworthiness codes; or

(ii) the standards of CS-23 or equivalent airworthiness codes within the commuter category or having a design diving speed (MD) above 0,6 or a maximum ceiling above 25 000 ft.

3.2 Competence Level 2 courses apply to:

a. Category 2 flight tests for:

(i) helicopters certified in accordance with the standards of CS-27 or CS-29 or equivalent airworthiness codes;

(ii) aeroplanes certified in accordance with:

- the standards of CS-25 or equivalent airworthiness codes; or
- the standards of CS-23 or equivalent airworthiness codes (including those mentioned in 3.1.b.(ii)), except for aeroplanes with a maximum take-off mass of less than 2 000 kg.

b. Category 1 flight tests for aeroplanes certified in accordance with the standards of CS-23, with a maximum take-off mass of 2 000 kg or above, with the exclusion of those mentioned in 3.1.b.(ii) (which are subject to competence Level 1 courses).

AEROPLANES

4. Competence Level 1 courses for aeroplanes

4.1. These courses should include approximately:

a. 350 hours of ground training; and

b. 60 hours of flight training, during which at least 10 flights should be made without an FTE tutor on board (i.e. unsupervised).

c. Principles of test management and risk and safety management should be integrated throughout the course. In addition, principles and methods applicable to the certification activity and safety assessments should be taught. A review of the principles of Crew Resource Management (CRM) tailored to the flight test environment should be included.

4.2. These courses should include instruction on at least six different aircraft types, of which, for LFTE duties on CS-25 aircraft, at least one should be certified in accordance with CS-25 standards or equivalent airworthiness codes.

4.3. During the course, the student should be required to develop at least five substantial flight test reports.

4.4. The student should be evaluated through examinations on all of the theoretical knowledge subjects, and should undertake a final in-flight test upon completion of the syllabus.

4.5. Syllabus. The following subjects should be covered in the course:

COMPETENCE LEVEL 1 - AEROPLANES	
Theoretical knowledge	- Aerodynamics - Stability and control/handling qualities - Engines and performance - Measurements and flight test instrumentation (including telemetry) - Human factors

Flight test techniques and flight training	Performance (at least one flight test report should be developed)	- Airspeed calibration - Climb multi-engine - Take-off and landing, including turboprop/turbofan one-engine-inoperative (OEI) - Level flight performance
	Engines	- Turboprop/turbofan limitations and relight envelope
	Handling qualities (at least two flight test reports should be developed)	- Flight controls characteristics - Longitudinal handling qualities - Longitudinal manoeuvre stability - Take-off and landing multi-turboprop/ turbofan, including Vmcg and Vmu - Lateral-directional handling qualities - Handling qualities evaluation - Variable stability demo flights including High-Order Flight Control Systems (HOFCS) - Stalls - Spins - Vmca
	Systems (at least one flight test report should be developed)	At least three different systems, for example: - Autopilot/Automatic Flight Control System (AFCS) - Glass cockpit evaluation - Radio navigation, instruments qualification and integrated avionics - Enhanced Ground Proximity Warning System (EGPWS) - ACAS
	High-speed certification test	
	Final evaluation exercise (a flight test report should be developed)	

5. Competence Level 2 courses for aeroplanes

5.1. These courses should include approximately:

a. 150 hours of ground training; and

b. 30 hours of flight training, during which at least 6 flights should be made without an FTE tutor on board (i.e. unsupervised).

c. Principles of test management and risk and safety management should be integrated throughout the course. In addition, principles and methods applicable to the certification activity and safety assessments should be taught. A review of the principles of CRM tailored to the flight test environment should be included.

5.2. These courses should include instruction on at least five different aircraft types, of which, for LFTE duties on CS-25 aircraft, at least one should be certified in accordance with CS-25 standards or equivalent airworthiness codes.

5.3. During the course, the student should be required to develop at least three substantial flight test reports.

5.4. The student should be evaluated through examinations on all of the theoretical knowledge subjects, and should undertake a final in-flight test upon completion of the syllabus.

5.5. Syllabus. The following subjects should be covered in the course:

COMPETENCE LEVEL 2 - AEROPLANES		
Theoretical knowledge	- Aerodynamics - Stability and control/handling qualities - Engines and performance - Measurements and flight test instrumentation (including telemetry) - Human factors	
Flight test techniques and flight training	Performance (at least one flight test report should be developed)	- Airspeed calibration - Climb multi-engine - Take-off and landing multi-turboprop/ turbofan - Level flight performance
	Handling qualities	- Flight control characteristics - Longitudinal static/dynamic stability and control/handling qualities - Lateral-directional stability and control/ handling qualities - Stalls - Spins
	Systems (at least one flight test report should be developed)	At least three different systems, for example: - Autopilot/AFCS - Glass cockpit evaluation - Radio navigation, instruments qualification and integrated avionics - EGPWS - ACAS
	Final evaluation exercise (a flight test report should be developed)	

HELICOPTERS

6. Competence Level 1 courses for helicopters

6.1. These courses should include approximately:

a. 350 hours of ground training; and

b. 60 hours of flight training, during which at least 15 flights should be made without an FTE tutor on board (i.e. unsupervised).

c. Principles of test management and risk and safety management should be integrated throughout the course. In addition, principles and methods applicable to the certification activity and safety assessments should be taught. A review of the principles of CRM tailored to the flight test environment should be included.

6.2. These courses should include instruction on at least six different aircraft types, of which, for LFTE duties on CS-29 rotorcraft, at least one should be certified in accordance with CS-29 standards or equivalent airworthiness codes.

6.3. During the course, the student should be required to develop at least five substantial flight test reports.

6.4. The student should be evaluated through examinations on all of the theoretical knowledge subjects, and should undertake a final in-flight test upon completion of the syllabus.

6.5. Syllabus. The following subjects should be covered in the course:

COMPETENCE LEVEL 1 - HELICOPTERS	
Theoretical knowledge	- Aerodynamics - Stability and control/handling qualities - Engines and performance - Measurements and flight test instrumentation (including telemetry) - Human factors

Flight test techniques and flight training	Performance (at least one flight test report should be developed)	- Airspeed calibration - Level flight, climb and descent, vertical and hover performance
	Engines	- Digital engine governing - Turbine/piston engine evaluation
	Handling qualities (at least one flight test report should be developed)	- Flight control characteristics - Longitudinal static/dynamic stability and control/handling qualities - Lateral-directional stability and control/ handling qualities - ADS 33 - Rotor assessment with different control powers - Variable stability demo flights including High-Order Flight Control Systems (HOFCS)
	Systems (at least one flight test report should be developed)	At least three different systems, for example: - Navigation management systems - Auto-pilot/AFCS - Night-vision goggles/electro-optics - Glass cockpit evaluation
	Height/velocity envelope and Engine-Off Landings (EOL), including relights	
	Category A procedure	
	Vibrations and rotor adjustments	
	Autorotations	
	Final evaluation exercise (a flight test report should be developed)	

7. Competence Level 2 courses for helicopters.

7.1. These courses should include approximately:

a. 150 hours of ground training; and

b. 30 hours of flight training, during which at least 6 flights should be made without an FTE tutor on board (i.e. unsupervised);

c. Principles of test management and risk and safety management should be integrated throughout the course. In addition, principles and methods applicable to the certification activity and safety assessments should be taught. A review of the principles of CRM tailored to the flight test environment should be included.

7.2. These courses should include instruction on at least four different aircraft types, of which, for LFTE duties on CS-29 rotorcraft, at least one should be certified in accordance with CS-29 standards or equivalent airworthiness codes.

7.3. During the course, the student should be required to develop at least three substantial flight test reports.

7.4. The student should be evaluated through examinations on all of the theoretical knowledge subjects, and should undertake a final in-flight test upon completion of the syllabus.

7.5. Syllabus. The following subjects should be covered in the course:

COMPETENCE LEVEL 2 - HELICOPTERS	
Theoretical knowledge	- Aerodynamics - Stability and control/handling qualities - Engines and performance - Measurements and flight test instrumentation (including telemetry) - Human factors

Flight test techniques and flight training	Performance (at least one flight test report should be developed)	- Airspeed calibration - Level flight, climb and descent, vertical and hover performance
	Engines	- Digital engines governing - Turbine/piston engine evaluation
	Handling qualities	- Flight control characteristics - Longitudinal static/dynamic stability and control/handling qualities - Lateral-directional stability and control/ handling qualities
	Systems (at least one flight test report should be developed)	At least three different systems, for example: - Navigation management systems - Auto-pilot/AFCS - Night-vision goggles/electro-optics - Glass cockpit evaluation
	Vibration and rotor adjustments	
	Final evaluation exercise (a flight test report should be developed)	

<ED Decision 2015/026/R new AMC/GM>

AMC No. 2
Conditions for appointment of Lead Flight Test Engineers (LFTEs) - Medical fitness

Appendix XII

1. Before the organisation issues an authorisation for an LFTE, the LFTE should undergo an initial medical examination and assessment. Afterwards, the LFTE should be regularly (typically every 2 years) reassessed to ensure that they will remain physically and mentally fit to safely discharge their duties. These examinations and assessments should take due account of the actual flight environment of the intended flight test activity.
2. Any medical examination or assessment should be carried out according to best aero-medical practice by an aero-medical practitioner who has sufficient, detailed knowledge of the applicant's medical history.
3. The organisation should maintain a record of medical fitness for each LFTE.
4. These assessments should attest that the LFTE:
   a. is in good health;
   b. is free from any physical or mental illness which might lead to incapacitation or inability to perform crew duties;
   c. has normal cardiorespiratory function;
   d. has normal central nervous system;
   e. has adequate visual acuity 6/9 with or without glasses;
   f. has adequate hearing; and
   g. has normal function of ear, nose and throat.
5. If the LFTE holds a Class 1 or Class 2 medical certificate issued in accordance with Part-MED, the assessment or examination is not necessary.

<ED Decision 2015/026/R new AMC/GM>

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