

KEMENTERIAN PERHUBUNGAN
DIREKTORAT JENDERAL PERHUBUNGAN UDARA

PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA

NOMOR : KP 121 TAHUN 2016

TENTANG

PEDOMAN TEKNIS OPERASIONAL

PERATURAN KESELAMATAN PENERBANGAN SIPIL BAGIAN 21 – 11
(*ADVISORY CIRCULAR CASR 21 – 11*) TENTANG PERSYARATAN, MUTU, DAN
IDENTIFIKASI PRODUK AERONAUTIKA YANG MEMENUHI PERSYARATAN
SEBAGAI BARANG PENGGANTI (*ELIGIBILITY, QUALITY AND IDENTIFICATION
OF APPROVED AERONAUTICAL REPLACEMENT PARTS*)

DENGAN RAHMAT TUHAN YANG MAHA ESA

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

- Menimbang :
- a. bahwa dalam Peraturan Menteri Perhubungan Nomor PM 98 Tahun 2015 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 21 (*Civil Aviation Safety Regulations Part 21*) tentang Prosedur Sertifikasi Untuk Produk dan Bagian-bagiannya (*Certification Procedures For Product and Parts*) telah diatur ketentuan mengenai produk aeronautika sebagai barang pengganti;
 - b. bahwa dalam rangka memberi bimbingan dan membantu operator pesawat udara untuk mengetahui persyaratan, mutu, dan identifikasi produk aeronautika yang memenuhi persyaratan sebagai barang pengganti, perlu disusun pedoman teknis operasional mengenai persyaratan, mutu, dan identifikasi produk aeronautika yang memenuhi persyaratan sebagai barang pengganti;

- c. bahwa untuk melaksanakan hal sebagaimana dimaksud pada huruf a dan b, perlu ditetapkan Peraturan Direktur Jenderal Perhubungan Udara tentang Pedoman Teknis Operasional Peraturan Keselamatan Penerbangan Sipil Bagian 21 - 11 (*Advisory Circular CASR 21 - 11*) Tentang Persyaratan, Mutu, Dan Identifikasi Produk Aeronautika Yang Memenuhi Persyaratan Sebagai Barang Pengganti (*Eligibility, Quality And Identification Of Approved Aeronautical Replacement Parts*);

- Mengingat :
1. Undang-Undang Republik Indonesia Nomor 1 Tahun 2009 tentang Penerbangan (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 1, Tambahan Lembaran Negara Republik Indonesia Nomor 4956);
 2. Peraturan Presiden Nomor 7 Tahun 2015 tentang Organisasi Kementerian Negara (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 38);
 3. Peraturan Presiden Nomor 40 Tahun 2015 tentang Kementerian Perhubungan (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 75);
 4. Peraturan Menteri Perhubungan Nomor PM 98 Tahun 2015 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 21 (*Civil Aviation Safety Regulations Part 21*) tentang Prosedur Sertifikasi Untuk Produk dan Bagian-bagiannya (*Certification Procedures For Product and Parts*);
 5. Peraturan Menteri Perhubungan Nomor PM 189 Tahun 2015 tentang Organisasi dan Tata Kerja Kementerian Perhubungan;

MEMUTUSKAN:

Menetapkan : PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA TENTANG PEDOMAN TEKNIS OPERASIONAL PERATURAN KESELAMATAN PENERBANGAN SIPIL BAGIAN 21 - 11 (*ADVISORY CIRCULAR CASR 21 - 11*) TENTANG PERSYARATAN, MUTU, DAN IDENTIFIKASI PRODUK AERONAUTIKA YANG MEMENUHI PERSYARATAN SEBAGAI BARANG PENGGANTI (*ELIGIBILITY, QUALITY AND IDENTIFICATION OF APPROVED AERONAUTICAL REPLACEMENT PARTS*).

Pasal 1

Memberlakukan Pedoman Teknis Operasional Peraturan Keselamatan Penerbangan Sipil Bagian 21 - 11 (*Advisory Circular CASR 21 - 11*) Tentang Persyaratan, Mutu, Dan Identifikasi Produk Aeronautika Yang Memenuhi Persyaratan Sebagai Barang Pengganti (*Eligibility, Quality And Identification Of Approved Aeronautical Replacement Parts*) sebagaimana tercantum dalam Lampiran yang merupakan bagian tak terpisahkan dari Peraturan ini.

Pasal 2

Pada saat Peraturan ini mulai berlaku, Keputusan Direktur Jenderal Perhubungan Udara Nomor: SKEP/46/IX/1998 tentang Petunjuk dan Tata Cara Pemenuhan Keputusan Menteri Perhubungan Nomor : KM 90 Tahun 1993 Lampiran 2, Tentang Penandaan Dari Persyaratan Mutu Produk Aeronautika Yang Memenuhi Persyaratan Sebagai Barang Pengganti, Bagian 21-11 (*Advisory Circular 21-11*), dicabut dan dinyatakan tidak berlaku.

Pasal 3

Direktur Kelaikudaraan dan Pengoperasian Pesawat Udara mengawasi pelaksanaan Peraturan ini.

Pasal 4

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
pada tanggal : 8 APRIL 2016

DIREKTUR JENDERAL PERHUBUNGAN UDARA
ttd.

SUPRASETYO

Salinan sesuai dengan aslinya
KEPALA BAGIAN HUKUM,



RUDI RICHARDO, S.H, M.H
Pembina Tk. I (IV/b)
NIP. 19670118 199403 1 001

LAMPIRAN
PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : KP 121 TAHUN 2016
TENTANG
PEDOMAN TEKNIS OPERASIONAL PERATURAN
KESELAMATAN PENERBANGAN SIPIL BAGIAN 21 - 11
(*ADVISORY CIRCULAR CASR 21 - 11*) TENTANG
PERSYARATAN, MUTU, DAN IDENTIFIKASI PRODUK
AERONAUTIKA YANG MEMENUHI PERSYARATAN SEBAGAI
BARANG PENGGANTI (*ELIGIBILITY, QUALITY AND
IDENTIFICATION OF APPROVED AERONAUTICAL
REPLACEMENT PARTS*)
TANGGAL : 8 APRIL 2016

ADVISORY CIRCULAR

AC 21-11

Eligibility, Quality and Identification of Approved Aeronautical Replacement Parts

Revision : 1

Date : 2016

REPUBLIC OF INDONESIA - MINISTRY OF TRANSPORT
DIRECTORATE GENERAL OF CIVIL AVIATION
JAKARTA - INDONESIA


FOREWORD

1. Purpose : This Advisory Circular (AC) provides information and guidance for use in determining the quality, eligibility and traceability of aeronautical parts and materials intended for installation on type certificated products and to enable compliance with the applicable regulations.
2. References : This Advisory Circular only and should be used in accordance with the applicable regulations.
3. Cancellation : Advisory Circular 21-11 Rev : - Date February 1998, has been cancelled.
4. Revisions : Revisions of this Advisory Circular will be approved by the Directorate General of Civil Aviation.

DIREKTUR JENDERAL PERHUBUNGAN UDARA
ttd.

SUPRASETYO

Salinan sesuai dengan aslinya
KEPALA BAGIAN HUKUM,
DIREKTORAT JENDERAL
PERHUBUNGAN UDARA



RUDI RICHARDO, S.H, M.H
Pembina Tk. I (IV/b)
NIP. 19670118 199403 1 001

Table of Contents

Foreword	i
Table of Contents	ii
1. Purpose	1
2. Cancellation	1
3. Related Regulations	1
4. Definitions	1
5. Related Reading Materials	4
6. Discussion	4
7. Identification of Replacement Parts	5
8. Information Relevant to Used Parts	7
9. Disposition of Life Limited Aircraft Parts	9
10. Parts Removed from Aircraft No Longer in Service	11
11. Parts Recovered from Aircraft Involved in Accidents	12
12. Disposal of Scrapped Parts	12
13. Condition for Safe Operation	13
14. Electrical Parts and Components	14
15. Know your Suppliers	15
16. Reporting Suspected Unapproved Parts (SUP)	16
17. Summary	16

ADVISORY CIRCULAR 21-11

Eligibility, Quality and Identification of Approved Aeronautical Replacement Parts

1. Purpose.

This advisory circular (AC) provides information and guidance for use in determining the quality, eligibility and traceability of aeronautical parts and materials intended for installation on type certificated products and to enable compliance with the applicable regulations.

2. Cancellation.

AC 21-11 Eligibility, Quality, and Identification of Approved Aeronautical Replacement Parts, revision '-' dated February 1998 is cancelled.

3. Related Regulations.

Civil Aviation Safety Regulations (CASR):

- a. Part 1, Definitions and Abbreviations.
- b. Part 21, Certification Procedures for Products and Parts.
- c. Part 39, Airworthiness Directives.
- d. Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration.
- e. Part 45, Identification and Registration Marking.
- f. Part 91, General Operating and Flight Rules.
- g. Part 121, Certification and Operations: Domestic, Flag and Supplemental Air Carriers and Commercial Operators of Large Aircraft.
- h. Part 135, Certification and Operating Requirements: for Commuter and Charter Certificate Holders

4. Definitions.

The following definitions apply to this AC:

- a. **Directorate General of Civil Aviation (DGCA) -Approved Parts.** Under CASR Part 21, section 21.8, parts which were produced under a DGCA approved production system and conform with DGCA approved data, may be approved under the following:
 - (1) A Parts Manufacturer Approval (PMA) issued under CASR Part 21, Subpart K.
 - (2) A Technical Standard Order Authorization (TSOA) issued by the Director General.
 - (3) In conjunction with type certification procedures for a product. In any manner approved by the DGCA, such as CASR Part 21, Subpart F, Parts Produced Under a Type Certificate (TC) and Subpart G, Production

Certificate (PC). In addition, CASR Part 21, Subpart N provides for the acceptance of a new part produced in a country with which the Indonesia has an agreement for the acceptance of parts for export and import. The part is approved when the country of manufacture issues a certificate of airworthiness for export for the part.

- b. **Acceptable Parts.** The following parts may be found to be acceptable for installation on a type certificated product:
 - (1) Standard parts (such as nuts and bolts) conforming to an established industry or Indonesian specification.
 - (2) Parts produced by an owner or operator for maintaining or altering their own product and which are shown to conform to DGCA approved data.
 - (3) Parts for which inspections and tests have been accomplished by appropriately certificated persons authorized to determine conformity to DGCA approved design data.
 - (4) Parts fabricated by an appropriate rated certificate holder with a quality system and consumed in the repair or alteration of a product or article in accordance with CASR Part 43.
 - (5) A commercial part as defined in CASR Part 21, section 21.1.
- c. **Article.** Means a material, part, component, process, or application.
- d. **Commercial Part.** An article that is listed on a DGCA – approved Commercial Parts List included in a Design Organisation Approval holder (DOA) instruction for continuous airworthiness (ICA).
- e. **Product.** A complete aircraft, aircraft engine, or propeller that has been type-certificated in accordance with the applicable regulations, and for which Type Certificate Data Sheets (TCDS) have been issued.
- f. **Standard Part.** Is a part manufactured in complete compliance with an established International Standard or industry-accepted specification, which includes design, manufacturing, and uniform identification requirements. The specification must include all information necessary to produce and conform the part. The specification must be published so that any party may manufacture the part. Examples include, but are not limited to the International recognized standard, such as National Aerospace Standards (NAS), Air Force-Navy Aeronautical Standard (AN), Society of Automotive Engineers (SAE), SAE Aerospace Standard (AS), Military Standard (MS), etc.
- g. **New.** Products, accessory, part, or material that has no operating time or cycle.

Note: There could be time/cycles on a newly type certificated product (e.g., use of a manufacturer's test cell or certification requirements).

- h. **Overhauled.** Describes an aircraft, aircraft engine, propeller, appliance, or component part using methods, techniques, and practices acceptable to the DGCA, which has undergone the following:
 - (1) Has been disassembled, cleaned, inspected, repaired when necessary, and reassembled to the extent possible.
 - (2) Has been tested in accordance with approved standards and technical data, or current standards and technical data acceptable to the DGCA (i.e., manufacturer's data), which have been developed and documented by the holder of one of the following:
 - (a) Type Certificate (TC).
 - (b) Supplemental Type Certificate (STC), or material, parts, processes, or appliance approvals under section 21.8.
 - (c) Part Manufacturer Approval (PMA).

- i. **Rebuilt.** Describes an aircraft, airframe, aircraft engine, propeller, or appliance, using new or used parts that conform to new part tolerances and limits or to approved oversized or undersized dimensions that has undergone the following:
 - (1) Has been disassembled, cleaned, inspected, repaired as necessary, and reassembled to the extent possible.
 - (2) Has been tested to the same tolerances and limits as a new item.

- j. **Return to Service Inspection Records.** The person approving or disapproving for return to service a type-certificated product must ensure that the required maintenance record entries comply with CASR part 43, and therefore must include the following information:
 - (1) Type of inspection and a brief description of the extent of the inspection.
 - (2) Date.
 - (3) Product hours, cycles, or life limits as applicable.
 - (4) Signatures, certificate number, and kind of certificate held by the person approving or disapproving for return to service.
 - (5) The appropriate certifying statement that the product or part thereof, is approved or disapproved for return to service, as applicable.

- k. **As Is.** Describes any airframe, aircraft engine, propeller, appliance, component part, or material, the condition of which is unknown.

- l. **Appropriately Certificated Person.** As related to return to service after maintenance, preventive maintenance, rebuilding, or alteration, can include the holder of an:

- (1) **Aircraft Maintenance Engineer License.** May perform maintenance, preventive maintenance, and alterations as provided in CASR Part 65.
- (2) **Approved Maintenance Organization certificated under CASR Part 145.** May perform maintenance, preventative maintenance, or alterations as provided in CASR part 145.
- (3) **Air Operator Certificate holder (AOC).** The holder of AOC may perform maintenance, preventive maintenance, or alterations as provided CASR Part 121 and Part 135.
- (4) **Manufacturer's Type Certificate (TC) or Production Certificate (PC).** May rebuild or alter any aircraft, aircraft engine, or propeller, or appliance manufactured by him under a TSOA, PMA, or Product or Parts Specification, or perform any inspection required under CASR part 91 while currently operating under a production certificate or approved production inspection system.

m. **Owner/Operator Produced Part.** Parts that were produced by an owner/operator for installation on their own aircraft (e.g., by an air operator). An owner/operator is considered a producer of a part, if the owner participated in controlling the design, manufacture, or quality of the part. Participating in the design of the part can include supervising the manufacture of the part or providing the manufacturer with the following: the design data, the materials with which to make the part, the fabrication processes, assembly methods, or the quality control procedures.

5. Related Reading Materials

- a. AC 21-29 Detecting and Reporting Suspected Unapproved Parts.
- b. SI 21-02, Airworthiness Certification of Aircraft and Related Product.
- c. SI 21-06, Production Approval and Surveillance Procedures.

6. Discussion

The DGCA receive reports of replacement parts being offered for sale as aircraft quality when the quality and origin of the parts are unknown or questionable. Such parts may be advertised or presented as "unused," "like new," or "remanufactured." These imply that the quality of the parts is equal to an acceptable part. Purchasers of these parts may not be aware of the potential hazards involved with replacement parts for which acceptability for installation on a type certificated product has not been established.

- a. The performance rules for replacement of parts and materials used in the maintenance, preventive maintenance, and alteration of aircraft that have (or have had) an Indonesian airworthiness certificate, and components thereof, are specified in CASR Parts 43, section 43.13, and CASR Part 145, section 145.201. These rules require that the installer of a part use methods, techniques, and practices acceptable to the DGCA. Additionally, the installer

of a part must accomplish the work in such a manner and use materials of such quality, that the product or appliance worked on will be at least equal to its original or properly altered condition with respect to the qualities affecting airworthiness.

- b. The continued airworthiness of an aircraft, which includes the replacement of parts, is the responsibility of the owner/operator, as specified in CASR Part 91, section 91.403, CASR Part 135 section 135.363, and CASR Part 121 section 121.363. These rules require that the installer determine that a part is acceptable for installation on a product or component prior to returning that product or component to service with the part installed. Those rules also require that the installation of a part must be accomplished in accordance with data approved by the DGCA, if the installation constitutes a major repair or alteration.
- c. As part of determining whether installation of a part conforms with all applicable regulations, the installer should establish that the part was manufactured under a production approval pursuant to Part 21, that an originally acceptable part has been maintained in accordance with CASR Part 43, or that the part is otherwise acceptable for installation (e.g., has been found to conform to data approved by the DGCA). This AC addresses means to help the installer make the required determinations.

7. Identification of Replacement Parts.

Acceptable replacement parts should be identified using one of the following methods:

- a. **Airworthiness Approval Tag.** DAAO Form 21-18 'Authorized Release Certificate', Airworthiness Approval Tag identifies a part or group of parts for export approval and conformity determination from production approval holders. It also serves as approval for return to service after maintenance or alteration by an authorized CASR Part 145 Approved Maintenance Organization, or the holder of an Indonesian Air Operator Certificate having an approved Continuous Airworthiness Maintenance Program under CASR Part 121 section 121.367 and Part 135 section 135.367.
- b. **Foreign Manufactured Replacement Parts.** New foreign manufactured parts for use on Indonesian type certificated products may be imported when the part meets the requirements under section CASR Part 21 section 21.502.
 - (1) The certification may be verified on a form similar to the DAAO Form 21-18, i.e. EASA Form One used by European member countries of the EASA, and FAA Form 8130-3, Airworthiness Approval Tag issued by Federal Aviation Administration, United States.

- (2) Used parts may be identified by the records required for approval for return to service as set forth in CASR Part 43, section 43.5. DAAO Form 21-18 may be used for this purpose if the requirements of CASR Part 43, section 43.5 are contained in or attached to the form and approved for return to service by a DGCA Approved Maintenance Organization or Air Operator Certificate holder under the requirement of their Continuous Airworthiness Maintenance Program. There is no set format or form required for a maintenance or alteration record. However, the data or information used to identify a part must be traceable to a person authorized to perform and approve for return to service maintenance and alteration under CASR Part 43. The records must contain as a minimum those data that set forth in CASR Part 43, section 43.9.
 - (3) The use of an authorization tag does not approve the installation of a part on a type-certificated product. Additional substantiated authorization for compliance with CASR Part 43 and the DGCA approved data for major repairs and alterations may be required for installation on a type certificated product.
- c. **DGCA TSO Markings.** TSOA is issued under CASR Part 21, subpart O. A TSOA must be permanently and legibly marked with the following:
- (1) 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.
 - (4) The applicable TSO number.
- d. **DGCA PMA Symbol.** A DGCAPMA is issued under CASR Part 21, subpart K. Each PMA part should be marked with the letters, "DGCA -PMA," in accordance with CASR Part 45, section 45.15:
- (1) The name.
 - (2) Trademark or symbol.
 - (3) Part number.
 - (4) Name and model designation of each certificated product on which the part is eligible for installation.

NOTE: Parts that are too small or otherwise impractical to be marked may, as an alternative, be marked showing the above information on an attached tag or labeled container. If the marking on the tag is too extensive to be practical, the tag attached to a part or container may refer to a readily available manual or catalog for part eligibility information. Under a licensing agreement, when the applicant has been given the right to use the TC holder's design, which includes the part number, and a replacement part is produced under that agreement, the part number may be identical to that of the TC holder, provided that the PMA holder includes the letters, "DGCA -PMA," and the

PMA holder's identification symbol is on the part. In all other cases, the PMA holder's part number must be different from that of the TC holder.

- e. **Production Approval Holder (PAH) Documents or Markings.** Shipping Ticket, Invoice, may provide evidence that a part was produced by a manufacturer holding a DGCA approved manufacturing process.
- f. **Direct Ship Authority.** In order for Indonesian manufactured parts with "direct ship" authority to be recognized as being produced under a manufacturer's DGCA production approval, the manufacturer must specifically authorize the shipping supplier, in writing, and must establish procedures to ensure that the shipped parts conform to the approved design and are in condition for safe operation. A statement to the supplier from the certificate holder authorizing direct shipment and date of authorization should be included on the shipping ticket, invoice, or other transfer document. It should contain a declaration that the individual part was produced under a ProductionCertificate.
- g. **Maintenance Release Document.** A release, signed by an appropriately certificated person, qualified for the relevant function that signifies that the item has been returned to service, after a maintenance or test function has been completed. This type of documentation could be in the form of an Approved Maintenance Organization tag, containing adequate information (CASR Part 43, section 43.9), work order, DAAO Form 21-18, or a maintenance record entry, which must include an appropriate description of the maintenance work performed, including the recording requirements of CASR Part 43, section 43.9 and Appendix B.

NOTE: When a non-certificated person certifies that they are shipping the correct part ordered, the only thing they are stating is that the part number agrees with the purchase order, not the status of DGCA acceptability of the part.

8. Information Relevant to Used Parts

The following information may be useful when assessing maintenance records and part status.

- a. **Documentation.** If the part has been rebuilt, overhauled, inspected, modified, or repaired, the records should include a maintenance release, return to service tag, repaired parts tag, or similar documentation from a DGCA certificated person. Documentation describing the maintenance performed and parts replaced must be made for the part (i.e. DAAO Form 21-18) or DGCA Approved Maintenance Organization work order). (Reference CASR Part 43, section 43.5 and Appendix B).

- b. **Information to be obtained.** The records should include information, either directly or by reference, to support documentation that may be helpful to the user or installer in making a final determination the airworthiness and eligibility of the part. Listed are examples of information that should be obtained, as applicable:
- (1) Airworthiness Directive (AD) status.
 - (2) Compliance or noncompliance with service bulletins.
 - (3) Life/cycle limited parts status (i.e., time, time since overhaul, cycles, history) should be substantiated. If the part is serialized and life-limited, then both operational time and/or cycles (where applicable) must be indicated. Historical records that clearly establish and substantiate time and cycles must be provided as evidence.
 - (4) Shelf-life data, including manufacturing date or cure date.
 - (5) Return to service date.
 - (6) Shortages applicable to assemblies or kits.
 - (7) Import or export certification documents.
 - (8) The name of the person who removed the part.
 - (9) Major Repair or Alteration, DAAO Form 43-337.
 - (10) Maintenance Manual standards used for performing maintenance.
- c. **Unusual Circumstances.** If a particular part was obtained from any of the followings, then it should be so identified by some type of documentation (i.e. maintenance record entries, removal entries, overhaul records).
- (1) Noncertificated aircraft (aircraft without airworthiness certificate, i.e. public use, non-Indonesian, and military surplus aircraft).
 - (2) Aircraft, aircraft engines, propellers or appliances subjected to extreme stress, sudden stoppage, heat, major failure or accident.
 - (3) Salvaged aircraft or aircraft components
- d. **Seller's Designation.** The seller may be able to provide documentation that shows traceability to a DGCA approved manufacturing procedure for one of the following:
- (1) Parts produced by a DGCA Production ApprovalHolder (Under TC, PC, PMA and TSOA).
 - (2) Parts produced by a foreign manufacturer in accordance with CASR Part 21, subpart N.
 - (3) Standard parts produced by a named manufacturer.
 - (4) Parts distributed with direct ship authority.
 - (5) Parts produced, for the work being accomplished, by an Approved Maintenance Organization to accomplish a repair or alteration on a specific type certificated product.

- (6) Parts produced by an owner or operator for installation on the owner's or operator's aircraft (e.g., by a certificated air carrier).
- (7) Parts with removal records showing traceability to an Indonesian certificated aircraft, signed by an appropriately certificated person.
- e. **Manufactured.** The manufacturer of the part should be identified; if not identified it may be difficult to prove that the part is acceptable for installation on a type-certificated product.
- f. **Certificates and Approvals Held.**
 - (1) **Manufacturers.** The certificate or approval held by the manufacturer, TC, PC, TSOA, or PMA may be listed; if not known, state as unknown.
 - (2) **Approved Maintenance Organization.** The certificate held by the Approved Maintenance Organization, CASR Part 145.
 - (3) **Air Operator.** The certificate held by Air Operators, CASR Part 121.
- g. **Part Description.** Indicate the part's physical description for positive identification.
- h. **Part Number.** Document the manufacturer's part number or, if the part has been modified, the amended part number.
- i. **Serial Number.** Document the specific part's serial number, if so marked. Determine if serialized part has any life or overhaul limitations.

9. Disposition of Life Limited Aircraft Parts.

Definitions used in this section. For the purposes of this section the following definitions apply.

- Life limited part means any part for which a mandatory replacement limit is specified in the type design, the Instructions for Continued Airworthiness, or the maintenance manual.
- Life status means the accumulated cycles, hours, or any other mandatory replacement limit of a life-limited part.

Each person who removes a lifelimited part from a type certificated product must ensure that the part is controlled in accordance with the followings:

- (a) Temporary removal of parts from type certificated products. When a life limited part is temporarily removed and reinstalled for the purpose of performing maintenance, no disposition under paragraph (c) of this section is required if -
 - (1) The life status of the part has not changed;
 - (2) The removal and reinstallation is performed on the same serial numbered product; and

- (3) That product does not accumulate time in service while the part is removed.
- (b) Disposition of parts removed from type-certificated products. Except as provided in paragraph (b) of this section, each person who removes a life limited part from a type certificated product must ensure that the part is controlled using one of the methods in this paragraph. The method must deter the installation of the part after it has reached its life limit. Acceptable methods include:
- (1) Record keeping system. The part may be controlled using a record keeping system that substantiates the part number, serial number, and current life status of the part. Each time the part is removed from a type certificated product, the record must be updated with the current life status. This system may include electronic, paper, or other means of record keeping.
 - (2) Tag or record attached to part. A tag or other record may be attached to the part. The tag or record must include the part number, serial number, and current life status of the part. Each time the part is removed from a type certificated product, either a new tag or record must be created, or the existing tag or record must be updated with the current life status.
 - (3) Non-permanent marking. The part may be legibly marked using a non-permanent method showing its current life status. The life status must be updated each time the part is removed from a type certificated product, or if the mark is removed, another method in this section may be used. The mark must be accomplished in accordance with the instructions under section 45.16 in order to maintain the integrity of the part.
 - (4) Permanent marking. The part may be legibly marked using a permanent method showing its current life status. The life status must be updated each time the part is removed from a type certificated product. Unless the part is permanently removed from use on type certificated products, this permanent mark must be accomplished in accordance with the instructions under section 45.16 in order to maintain the integrity of the part.
 - (5) Segregation. The part may be segregated using methods that deter its installation on a type-certificated product. These methods must include, at least-
 - (i) Maintaining a record of the part number, serial number, and current life status, and
 - (ii) Ensuring the part is physically stored separately from parts that are currently eligible for installation.
 - (6) Mutilation. The part may be mutilated to deter its installation in a type certificated product. The mutilation must render the part beyond repair and incapable of being reworked to appear to be airworthy.
 - (7) Other methods. Any other method approved or accepted by the DGCA.

- (c) Transfer of life-limited parts. Each person who removes a life-limited part from a type certificated product and later sells or otherwise transfers that part must transfer with the part the mark, tag, or other record used to comply with this section, unless the part is mutilated before it is sold or transferred.

10. Parts Removed from An Aircraft No Longer in Service

- a. Aircraft withdrawn from service are often used as a source of spare parts, a process sometimes described as “parting out”. These parts, although serviceable at the time the aircraft was placed in storage, may have been affected adversely by storage conditions, including especially environmental factors, or by the length of storage.
- b. The records for the aircraft and its parts prior to the aircraft being placed into storage will need to be researched in order to ascertain the previous maintenance history, and MCAI, modification and repair status of the parts being removed. Any unusual events immediately prior to storage, e.g. heavy landings or lightning strikes, will also have to be considered when deciding on the serviceability of the parts being removed.
- c. It is important that the part removal process be planned and controlled in a manner as close as possible to that adopted for routine maintenance tasks on in-service aircraft. The following points in particular should be considered:
 - (1) the means by which the part is removed should be in accordance with the normal maintenance data (e.g. maintenance manuals), using the tooling specified;
 - (2) adequate access equipment should be provided;
 - (3) if conducted in the open, disassembly should cease during inclement weather;
 - (4) all work should be carried out by appropriately qualified maintenance personnel;
 - (5) all open connections should be blanked;
 - (6) a protected and enclosed quarantine storage area for the parts being removed should be provided in the immediate vicinity of the work area; and
 - (7) normal maintenance documentary controls should be used, e.g. the use of work sheets or cards to record component removals, and label identification to show serviceability status.
- d. An assessment for condition and eventual return to service of each removed part will need to be conducted by a suitably approved organization. The extent of the work necessary before the part is returned to service with the range from a simple external visual inspection to a complete overhaul.

11. Parts Recovered from Aircraft Involved in Accidents

- a. When an aircraft has been involved in an accident, the title to the salvage may pass from the insured aircraft owner to other persons (e.g. aircraft insurers); this salvage may be offered for sale either complete or as separate aircraft items in an “as is, where is” condition. While some items may be totally unaffected by the accident or incident which caused the aircraft to be declared as salvage, it is essential to obtain clear evidence that this is the case. If such evidence cannot be obtained, the item may not be returned to service.
- b. Before overhaul and reinstallation can be considered, all such items must therefore be subject to airworthiness assessment and inspection in the light of adequate knowledge of the circumstances of the accident, subsequent storage and transport conditions, and with evidence of previous operational history obtained from valid airworthiness records. Confirmation of this assessment in the form of an airworthiness release is essential.
- c. In particular, if a crash load is sufficient to take any part above its proof strength, residual strains may remain which could reduce the effective strength of the item or otherwise impair its functions. Loads higher than this may of course crack the item, with an even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material’s characteristics following overheat from a fire. It is therefore of the utmost importance to establish that the item is not cracked, distorted or overheated. The degree of distortion may be difficult to assess if the precise original dimensions are not known, in which case there is no option but to reject the item. Any suggestion of overheating would be cause for a laboratory investigation into significant change of material properties.

12. Disposal of Scrapped Parts

- a. Those responsible for the disposal of scrapped aircraft parts and materials should consider the possibility of such parts and materials being misrepresented and sold as serviceable at a later date. Caution should be exercised to ensure that the following types of parts and materials are disposed of in a controlled manner that does not allow them to be returned to service:
 - 1) parts with non-repairable defects, whether visible or not to the naked eye;
 - 2) parts that are not within the specifications set forth by the approved design and cannot be brought into conformity with applicable specifications;
 - 3) parts and materials for which further processing or rework cannot make them eligible for certification under an approved system;
 - 4) parts subjected to unacceptable modifications or rework that is irreversible;
 - 5) life-limited parts that have reached or exceeded their life limits, or have permanently missing or incomplete records;
 - 6) parts that cannot be returned to an airworthy condition due to exposure to extreme forces or heat; and

- 7) principal structural elements removed from a high cycle aircraft for which conformity cannot be accomplished by complying with the mandatory requirements applicable to ageing aircraft.
- b. Scrapping of parts and materials may not be appropriate in certain cases when there is an ongoing evaluation process to determine whether a part or material may be restored to an airworthy condition. Examples of these cases include the extension of life limits, the re-establishment of in-service history records, or the approval of new repair methods and technologies. In these cases, such parts should be segregated from serviceable parts until the decision has been made as to whether these parts can be restored to an airworthy condition, or be scrapped.
- c. Scrapped parts should always be segregated from serviceable parts and when eventually disposed of should be mutilated or clearly and permanently marked. This should be accomplished in such a manner that the parts become unusable for their original intended use and unable to be reworked or camouflaged to provide the appearance of being serviceable.
- d. When scrapped parts are disposed of for legitimate non-flight uses, such as training and education aids, research and development, or for non-aviation applications, mutilation is often not appropriate. In such cases the parts should be permanently marked indicating that they are not serviceable; alternatively, the original part number or data plate information can be removed or a record kept of the disposition of the parts.

13. Condition for Safe Operation

Parts and materials should be properly stored, protected, and maintained to ensure airworthiness. The following factors should be considered when determining airworthiness:

- a. **Composite Materials.** Generally, most composite materials (thermoses polymers) have a refrigeration shelf-life recommended by the manufacturer. Composite materials must be kept refrigerated in accordance with the manufacturer's recommended temperature range and out-of-refrigeration time (out-time) limitations. Records must be maintained of the cumulative total of material out-time to prevent exceeding shelf-life.
- b. **Anti-friction Bearings.** Anti-friction bearings that have been in storage for a long period of time, or have been improperly stored, are subject to the deteriorating effects of time and elements, unless they were hermetically sealed. Such parts should be completely inspected and lubricated before being placed in service.
- c. **Aircraft Fabric.** Fabric and prefabricated covers should be used only if they are identifiable as meeting aircraft standards. All fabric should be examined

or tested for freedom from deterioration, as determined by an appropriately certificated person.

- d. **Dope, Paint, Sealants, and Adhesives.** These items advertised as aircraft quality may have deteriorated due to age or environmental conditions, while in storage, and may require testing before use.
- e. **Parts with Internal Seals.** Internal seals on parts such as pumps, valves, actuators, motors, generators, and alternators are subject to deterioration from long-term storage and are susceptible to early failure in service. A procedure should be established for control of shelf-life items in order to prevent possible premature failures of the parts/components, unless other preventive procedures are in place.
- f. **Rotating Components.** Rotating components, such as propellers, engine parts, and rotor blades, may have a life-limit or retirement life. Maintenance records should reflect a complete continuity of service time and repair history. Information that indicates whether the component has exceeded the life limit may, in some cases, be obtained from the manufacturer or from an DGAC-Approved Maintenance Organization that may have affixed a logo, decal, or some other identification.
- g. **Heat and Fire.** Parts that may have been exposed to heat or fire can be seriously affected and are likely unserviceable.
- h. **Corrosives.** Foreign or corrosive liquids can also be detrimental on aircraft parts. Parts, appliances, and components that have been submerged in salt water may be unserviceable parts.
- i. **Manufacturing Rejects.** Parts that failed the manufacturer's quality assurance inspection criteria for conformity to type design, may be offered for sale by the manufacturers as scrap without being mutilated or destroyed rendering them unusable, and are unacceptable for installation.
- j. **Damaged Aircraft.** Parts removed from an aircraft involved in an accident may have been subjected to undue stresses that may have seriously effected structural integrity and rendered them permanently unusable. These part are unacceptable and must be permanently destroyed.
- k. **Rebuilt Engines.** Only engines that are rebuilt by a manufacturer holding a DGAC production approval holder, or an appropriately rated DGCA - Approved Maintenance Organization can be considered as zero-timed (reference section 91.421).

14. Electrical Parts and Components

- a. **Electronic Kits.** Kits assembled by non-certificated individuals are not eligible for installation on type-certificated aircraft, until the part is certified as airworthy and found eligible for installation, in accordance with CASR parts 21 and 43. During and after assembly, these kits should receive documented conformity inspections, by properly certificated persons, to ensure that they meet all applicable airworthiness requirements, for use on the specific

aircraft on which they are to be installed. The installation of these approved units should be accomplished by or under the supervision of a properly certificated person or agency in accordance with CASR parts 21 and 43. When the installation is a major alteration, the kit data and the data used for the alteration of the product must be approved by a representative of the DGCA. An appropriately certificated person must complete the maintenance records to ensure that the aircraft is approved and airworthy for return to service.

- b. **Discrete Electrical and Electronic Component Parts.** Electrical and electronic parts, such as resistors, capacitors, diodes, and transistors, if not specifically marked by the equipment manufacturers part number or marking scheme, may be substituted or used as replacement parts, provided that such parts are tested or it is determined that they meet their published performance specifications and do not adversely affect the performance of the equipment or article into or onto which they are installed. The performance of such equipment or article must be equal to its original or properly altered or repaired condition. Integrated circuits such as hybrids, large scale integrated circuits (LSIC), programmable logic devices, gate arrays, application specific integrated circuits (ASIC), memories, CPU's etc., are not included because their highly specialized functionality does not readily lend itself to substitution.
- c. **Aircraft Instruments.** Instruments advertised as "high quality," "looks good," or "remanufactured" or that were acquired from aircraft involved in an accident should not be put in service unless they are inspected, tested, and/or overhauled as necessary, by an appropriately rated DGCA Approved Maintenance Organization, and the installer establishes that (for the aircraft in which) the instrument installed will comply with the applicable regulations.

NOTE: Instruments are highly susceptible to hidden damage caused by rough handling or improper storage conditions; therefore, instruments that have been sitting on a shelf for a period that cannot be established, should be tested by an appropriately rated DGCAcertificated person.

15. Know your Suppliers

- a. **Used and Repaired Parts.** In addition to unapproved parts, used or repaired parts may be offered for sale as "like new," "near new," and "remanufactured." Such terms do not aid the purchaser in positively determining whether the part is acceptable for installation on a type certificated product and do not constitute the legal serviceability and condition of aircraft parts.

- b. **Caution.** It is the installer's responsibility to ensure airworthiness. Aircraft parts distributors, aircraft supply companies or aircraft electronic parts distributors, unless they are a PAH, cannot certify the airworthiness of the parts they advertise and/or sell; therefore, it is the installer's responsibility to request documentation establishing traceability to a PAH.

16. Reporting Suspected Unapproved Parts (SUP)

- a. SUP's are parts, components, or materials that may not be approved or acceptable. Some appear to be as good as the part manufactured from an DGAC- approved source; however, there may be manufacturing processes that were not performed in accordance with DGCA approved data or possibly not performed at all, and would not be readily apparent to the purchaser (e.g., heat treating, plating, or various tests and inspections).
- b. **Reporting SUP's.** Persons with possible knowledge of safety violations or other circumstances that may affect aviation safety are encouraged to report them to the DGCA office, in accordance with AC 21-29. Report may be filed by using DAAO Form 21.35.

17. Summary

The approval for return to service after maintenance of aircraft, engines, propellers, appliances, and materials and parts thereof, is the responsibility of the person who performs the maintenance and who signs the record for approval for return to service. The owner/operator is responsible for the continued airworthiness of the aircraft. To ensure continued safety in civil aviation, it is essential that appropriate data is used when inspecting, testing, and determining the acceptability of all parts and materials. Particular caution should be exercised when the origin of parts, materials, and appliances cannot be established or when their origin is in doubt.