



**MENTERI PERHUBUNGAN
REPUBLIK INDONESIA**

KEPUTUSAN MENTERI PERHUBUNGAN

NOMOR : KM . 7 Tahun 1995

TENTANG

**PENYEMPURNAAN KEPUTUSAN MENTERI PERHUBUNGAN UDARA
NOMOR T.II/2/4-U TENTANG PERATURAN-PERATURAN
KESELAMATAN PENERBANGAN SIPIL**

MENTERI PERHUBUNGAN,

- Menimbang** :
- a. bahwa Peraturan Keselamatan Penerbangan Sipil mengenai Maintenance and Modification of Aircraft, Aircraft Components and Appliances yang ditetapkan dalam Part 18 Lampiran Keputusan Menteri Perhubungan Udara Nomor T.II/2/4-U, tidak sesuai lagi dengan kebutuhan dan perkembangan saat ini;
 - b. bahwa sehubungan dengan hal tersebut huruf a, perlu menyempurnakan Part 18 Lampiran Keputusan Menteri Perhubungan Udara Nomor T.II/2/4-U, dengan Keputusan Menteri Perhubungan;
- Mengingat** :
1. Undang-undang Nomor 15 Tahun 1992 tentang Penerbangan (Lembaran Negara Tahun 1992 Nomor 53, Tambahan Lembaran Negara Nomor 3481);
 2. Keputusan Presiden Nomor 44 Tahun 1974 tentang Pokok-pokok Organisasi Departemen;
 3. Keputusan Presiden Nomor 15 Tahun 1984 tentang Susunan Organisasi Departemen, sebagaimana telah diubah terakhir dengan Keputusan Presiden Nomor 18 Tahun 1994;
 4. Keputusan Menteri Perhubungan Udara Nomor T.II/2/4-U tentang Peraturan - Peraturan Keselamatan Penerbangan Sipil;

5. Keputusan Menteri Perhubungan Nomor KM.91/OT.002/PHB-80 dan Nomor KM.164/OT.002/Phb-80 tentang Organisasi dan Tata Kerja Departemen Perhubungan, sebagaimana telah diubah terakhir dengan Keputusan Menteri Perhubungan Nomor KM.58 Tahun 1991;

MEMUTUSKAN :

Menetapkan : **KEPUTUSAN MENTERI PERHUBUNGAN TENTANG PENYEMPURNAAN KEPUTUSAN MENTERI PERHUBUNGAN UDARA NOMOR T.II/2/4-U TENTANG PERATURAN-PERATURAN KESELAMATAN PENERBANGAN SIPIL.**

Pasal I



Menyempurnakan Part 18 mengenai Maintenance and Modification of Aircraft, Aircraft Components and Appliances sebagaimana dalam Lampiran Keputusan Menteri Perhubungan Udara Nomor T.II/2/4-U tentang Peraturan-peraturan Keselamatan Penerbangan Sipil, menjadi sebagaimana tercantum dalam Lampiran Keputusan ini.

Pasal II

Keputusan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : JAKARTA

Pada tanggal : 15 Maret 1995

 **MENTERI PERHUBUNGAN**

Dr. HARJANTO DHANUTIRTO

SALINAN Keputusan ini disampaikan kepada:

1. Menko bidang EKKU dan Wasbang;
2. Menteri Perindustrian;
3. Menteri Negara Riset dan Teknologi/Ketua BPPT;
4. Menteri Pertahanan dan Keamanan;
5. Kepala Badan Pengawasan Keuangan dan Pembangunan;
6. Sekjen, Irjen, para Dirjen dan para Kaban di lingkungan Departemen Perhubungan;
7. Para Kepala Biro di lingkungan Sekretariat Jenderal, Departemen Perhubungan.

LAMPIRAN KEPUTUSAN MENTERI PERHUBUNGAN

NOMOR : KM.7 Tahun 1995
TANGGAL : 15 Maret 1995

CIVIL AVIATION SAFETY REGULATIONS

PART 18

MAINTENANCE AND MODIFICATION OF AIRCRAFT,
AIRCRAFT COMPONENTS AND APPLIANCES

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SECTION 18.0

MAINTENANCE AND MODIFICATION OF AIRCRAFT, AIRCRAFT COMPONENTS AND APPLIANCES GENERAL

18.0. APPLICABILITY.

This Part establishes rules for the performance and certification of maintenance and modifications on Indonesian aircraft and on aircraft components and appliances fitted to or intended to be fitted to Indonesian aircraft.

18.0.1. DEFINITIONS

When the following terms are used in this Part they have the following meanings :

Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air.

Aircraft Component. Any apparatus or portion of an aircraft which when fitted to an aircraft is essential to the operation of the aircraft.

Aircraft Maintenance Specifications. Specifications in respect of an aircraft defining the manner in which such aircraft, and aircraft components and appliances fitted to or intended to be fitted to such aircraft, are to be maintained for the purpose of issuance of the maintenance release.

Appliance. Any instrument, equipment, apparatus, part or accessory, other than an aircraft component, which is fitted to or intended to be fitted to an aircraft.

Approved. Approved by or on behalf of the Director in accordance with the pertinent requirements of these Regulations.

Commercial Operation. Any air Operation which is classified under the pertinent definitions of Parts. 40, 42 and 44 of the Regulations as a scheduled air transport operation, nonscheduled air transport operation or aerial work operation.

Indonesian Aircraft. An aircraft registered by the Minister of Transportation in accordance with Chapter V of the Aviation Act. 1992 (Undang-Undang No. 15, 1992).

Licensed Aircraft Maintenance Engineer. An individual holding a valid aircraft maintenance engineer license issued under Part 30 of the Regulations.

Maintenance. All work performed to maintain aircraft, aircraft components and appliances in an airworthy condition, including inspection, servicing, overhaul, repair and the replacement of parts.

Maintenance Release. A certification of compliance with the maintenance requirements of this Part.

Major Modification. Any modification which

- (1) might cause an appreciable change in aircraft weight, balance, structural strength, performance, flight characteristics, engine operation or other qualities affecting airworthiness, or
- (2) is not accomplished in accordance with accepted practices or cannot be performed by means of elementary operations.

NOTE : Typical operations classified as major modifications are listed in Appendix 18-A, see also C.A.S.R. 21.93 Attachment II to Minister decree KM 90 thn 1993.

Major Repair. Any repair which -

- (1) if improperly accomplished would adversely affect aircraft structural strength, performance, flight characteristics, engine operation or other qualities affecting airworthiness ; or
- (2) is not accomplished in accordance with accepted practices or cannot be performed by means of elementary operations.

NOTE : Typical operations classified as major repairs are listed in Appendix 18-B.

Minor Modifications. Any modification of an aircraft, aircraft component or appliance other than a major modification.

NOTE : Typical operations classified as minor modifications are listed in Appendix 18-C, see also C.A.S.R. 21.93 Attachment II to Minister Decree KM. 90 Thn 1993.

Minor Repair. Any repair of an aircraft, aircraft component or appliance other than a major repair.

NOTE : Typical operations classified as minor repair are listed in Appendix 18-D.

Modification. Any appreciable change in the design or an aircraft, aircraft component or appliance, see also C.A.S.R. 21-93 of Attachment II to Minister decree KM 90 thn 1993.

Person. Any individual, organization or enterprise.

Repair. The restoration of an aircraft, aircraft component or appliance to a condition for safe operation after damage or deterioration

Scheduled Air Transport Operator. An individual organization or enterprise engaged in, or offering to engage in, a scheduled air transport operation as defined in Part 40 of these Regulations.

To certify. To accept responsibility for the completion of specified maintenance work in accordance with sound engineering practice and the requirements of these Regulation.

To return to Service. To certify any aircraft, aircraft component or appliance fit for service by issuing a maintenance release, certificate of maintenance, "serviceable" tag or release note, as the case may require.

The Director. The Director General of Air Communications.

The Directorate. The Directorate General of Air Communications (DGAC).

18.0.2. MATERIALS, PARTS COMPONENTS AND APPLIANCES.

18.0.2.0. *Manufacture and modification.* No material, part, component or appliance shall be embodied in an aircraft during maintenance or modification unless it has been manufactured in conformity with the pertinent specification requirements of Attachment II to MD KM 90/1993 (C.A.S.R. Part 21 of these Regulations. Materials, parts components and appliances which are required to conform to approved specifications shall have been manufactured and certified by an approved manufacturer and, if subsequently modified, shall have been modified and certified in conformity with the requirements of this Part.

18.0.2.1. *Maintenance.* No aircraft component or appliance, or part thereof, which has been used previously or held in storage for an extended period shall be embodied in an aircraft during maintenance or modification unless it has been maintained and certified in conformity with the requirements of this Part.

18.0.3. AIRCRAFT MAINTENANCE SPECIFICATIONS.

18.0.3.0. *Specification required.* An owner shall ensure that there are effective in respect of each of this aircraft complete aircraft maintenance specifications prepared and approved in accordance with complete the requirements of this Sub-section.

18.0.3.1. *Content of Specification.* The complete aircraft maintenance specifications for any aircraft or type of aircraft shall contain the following information:

- (1) Aircraft, engine and propeller manufactures type designations and the serial number and registration marks of the aircraft to which the specifications apply;
- (2) A schedule of the routine and periodic maintenance inspections necessary to perform and certify each such inspection;
- (3) Time-limitations for overhauls and special checks and inspections (other than checks and inspections specified in accordance with (2) above) of airframe components, engines, propellers and all other components and appliances the serviceability of which is dependent on their time in service; and
- (4) Rules for the issuance of the maintenance release.

18.0.3.2. *Approval of Specifications.*

- (a) New or amended specifications shall be submitted for approval on the form and in the manner prescribed by the Director.

- (b) The Director may approve aircraft maintenance specifications in respect of a particular aircraft or type of aircraft if he is satisfied that such specifications, when applied in conjunction with the associated inspection forms provided in accordance with 18.2.1.1, if will result in a program of maintenance adequate for safety.
- (c) Amendments to approved aircraft maintenance specifications shall be subject to the approval of the Director.
- (d) The Director may require the amendment of an approved maintenance specification and in such case the of the aircraft affected shall ensure that the amendment required is owner (5) executed promptly and to the satisfaction of the Director.

18.0.4 AIRWORTHINESS DIRECTIVES

18.0.4.0 *Issuance of Airworthiness Directives.* The Director may, where he considers it necessary in the interests of safety, issue an instruction requiring mandatorily the modification or inspection, before a specified date or before the expire of a specified period, of any aircraft, aircraft engines, propellers, or appliances (hereinafter referred to in this section as "product:"). Such an instruction shall be known as Airworthiness Directive and shall be brought to the notice of owners of all aircraft, aircraft engines, propellers or appliance to which it is applicable

18.0.4.1 *Method of Compliance.* A modification or instruction specified in an Airworthiness Directive shall carried out in conformity with the instructions contained in or referred to in such Airworthiness Directive; Provided that, a modification or inspection differing from that prescribed by the Airworthiness Directives may be substituted if it provides an equivalent level of safety and is approved by Director general.

NOTE : Owners should notify the DGAC of any special circumstances which make it unusually difficult or impracticable to comply with an Airworthiness Directive.

18.0.4.2 *Log Entry.* Compliance with an Airworthiness Directive shall be recorded in appropriate aircraft, engine, or propeller log book. The log entry shall refer to the Airworthiness Directive by number and date of compliance.

18.0.4.3 *Airworthiness Directives.* All Airworthiness Directive issued by the Director General are contained is section 18.0.4.3 by reference on the Airworthiness Directiv issued by the Director general are hereby transfered to this section of Civil Aviation Safety regulation.

18.0.4.4 No person may operate a product to which an Airworthiness Directive applies except in accordance with the requirements of that Airworthiness Directive.

18.0.5. DOUBLE INSPECTIONS.

18.0.5.0. *Definition.* A double inspection is an inspection which is first performed and certified by one individual and then repeated by another individual and again certified.

NOTE : The individuals performing a double inspection may be the employees of an approved aircraft maintenance organization, in which case both certifications will be made on behalf of the approved organization.

18.0.5.1. Double inspection required. Any assembly, system or appliance the function of which such is that its failure could prejudice the safety of an aircraft shall, when undergoing maintenance or modification, be subjected to a double inspection.

NOTE : Operations requiring double inspections include, but are not limited to the followings:

- (1) Installation of propellers or rotor blades ;
- (2) Assembly of wing panels and control surfaces ;
- (3) Rigging and adjustment of flight controls ;
- (4) Installation of engines in aircraft ;
- (5) Final test and calibration of any article used for flight under IFR ;
- (6) The overhaul or repair of control system components.

8.0.5.2. Persons authorized to perform and certify Double Inspections.

- (a) Both parts of a double inspection shall be performed and certified by either:
 - (1) appropriately licensed aircraft maintenance engineers; or
 - (2) an approved and appropriately rated aircraft maintenance organization.
- (b) Where the inspection is performed by an approved organization, at least the second part of the inspection shall be performed and certified, on behalf of the organization, by an appropriately qualified member of the organization's inspection department.

18.0.5.3. Inspection Rules.

- (a) An assembly, system or appliance subject to double inspection must not be disturbed or readjusted between the first and second parts of the inspection, and the second part of the inspection must, as nearly as possible, follow immediately after the first part.
- (b) Where the double inspection is required under 18.0.5.1. of an assembly, system or appliance which incorporate parts or internal locking provisions which are concealed during bench assembly, or critical assembly features the correctness of which cannot be proved during final inspection or functional testing, the inspection shall be performed at an appropriate stage of the assembly operation.
- (c) It shall be the responsibility of the persons returning an aircraft, aircraft component or appliance to service after maintenance or modification to ensure that all double inspections required under 18.0.5.1. have been completed and certified by appropriately authorized persons.

18.0.6. REPORTING OF SERVICE DIFFICULTIES

18.0.6.0 Definitions

- (a) *Defect.* A condition of an aircraft, aircraft component or appliance, arising in the course of normal aircraft operations, which would preclude such aircraft, aircraft component or appliance from, satisfactorily performing its intended function or reduce its service life below that which could reasonably be expected in normal service or which has been approved for it.
- (b) *Major defect.* A defect the existence of which could seriously prejudice the safety of the aircraft or its occupants in the air or on the ground.

18.0.6.0 Mandatory Reporting Requirements

- (a) An owner, or operator or approved aircraft maintenance organization shall submit a Service Difficulty Report in duplicate to the Director General using a Director General form not later 72 hours from the time of occurrence or discovery of a service difficulty.
- (b) In the event that a service difficulty report submittal may be delayed past 72 hours the owner, or operator or approved maintenance organization shall notify the Director General of the occurrence by other appropriate means before the expire of the 72 hours.
- (c) Approved aircraft maintenance organizations who are not the owners or operators of service difficulty effected Indonesian registered aircraft shall, in addition to submitting a service difficulty report to the Director General also provide the operator a copy of the Service Difficulty Report.

(c) Reportable Service Difficulties

- (1) Serious defects, malfunctions and failures of aircraft systems, engines, components, or equipment.
- (2) Airframe structural failure, defects, cracks, corrosion, or damage exceeding manufacturers continued in-service limits.
- (3) Operational occurrences requiring conditional inspections, i.e. lighting/bird strikes, overweight/hard landings, hazardous material spillage, and repeated rejected/aborted takeoffs for real or false unsafe warning condition.
- (4) Unusual technical deficiencies/difficulties such as design or manufacturing errors, gross maintenance errors, and serious personnel injury while performing maintenance.

18.0.6.1. NON REPORTABLE OCCURRENCES

- (a) Unserviceability of items to be deficient in approved Minimum Equipment List (MEL) or Configuration Deviation List (CDL) documents unless those items for other reasons cause unsafe condition.

- (b) Simulation of system/component failure condition for training, system checks or testing purposes.

18.0.6.2. RETENTION AND TRANSFER OF SERVICE DIFFICULTY REPORTS

Service Difficulty Reports shall be retained and transferred according to the following requirements :

- (a) Aircraft owner - retain until one year after the aircraft is sold, destroyed, or permanently retired from service. If sold, provide the new owner a copy of each Service Difficulty report.
- (b) Aircraft operator (if not owner) - retain until the aircraft is no longer under its operational control. At that time, provide the owner with a copy of each Service Difficulty report.
- (c) Approved aircraft maintenance organization (if not owner or operator) - retain each Service Difficulty Report for two years.

18.0.6.3 ADDITIONAL REQUIREMENTS FOR SCHEDULED AND NON-SCHEDULED AIR TRANSPORT OPERATORS

- (a) Scheduled and non-scheduled Air Transport Operators operating under the rules of CASR 40 and 42 shall maintain a current list and status of Service Difficulty reports submitted to the Director general.
- (b) The operator shall forward to the Director General at the beginning of each month a summary of those Service Difficulty Reports that have been submitted during the past month, and also a status of those previous Service Difficulty reports that are still under investigation or analyses by the operator.

18.0.7.0 AIRWORTHINESS AUTHORIZATIONS

18.0.7.0 ISSUANCE OF AUTHORIZATIONS

- (a) The Director General may authorize qualified person to perform and/or certify for any of the following activities :
 - (1) Maintenance and Modification of Aircraft
 - (2) Non Destructive Testing
 - (3) Welding
 - (4) Weighing of Aircraft
 - (5) Compass Swinging
 - (6) Taxiing Aircraft
- (b) The above activities shall be subject to such conditions and limitations as he deems necessary.
- (c) Authorizations issued under sub-paragraph (a) of this paragraph shall be know as :

- (1) Restricted Maintenance Authorization. (RMA)
- (2) Non Destructive Testing Authorization. (NDTA)
- (3) Welding Authorization. (WA)
- (4) Weight Control Authorization. (CSA)
- (5) Compass Swinging Authorization. (CSA)
- (6) Aircraft Taxiing Authorization. (ATA)

(d) The limitations and conditions of such authorizations will be set out on the authorization document issued to the authorized person.

18.0.7.1 CONDITIONS OF ISSUANCE

The conditions for issuance of an Airworthiness Authority shall be as prescribed by the Director General; provided that, no individual shall be authorized under this sub-section unless :

- (1) He has attained the age of 21 years; and
- (2) He has had recent experience of the work in respect of which the authorization is sought; and
- (3) He has demonstrated to the satisfaction of the Director general his ability to perform such work.

18.0.7.2 PERIOD OF VALIDITY OF AUTHORIZATION.

An Airworthiness Authorization shall remain valid for the period specified in the authorization document. Such period will not exceed 24 months from the date of issue or renewal of the authorization, renewal shall be subject to such conditions as the Director General may prescribe.

- (1) Persons holding an Airworthiness Authorization shall observe the requirements of the CASRs.
- (2) Persons holding a Restricted Maintenance Authorization shall operate under the Aircraft Maintenance Engineer rules of Section 30.2 of these Regulations.
- (3) Persons holding either a Non destructive testing Authorization, Welding Authorization or Compass Swing Authorization shall certify for the completion of their work in the relevant work document, and record their authorization number and the date.

18.0.8 SPECIALIST ACTIVITIES

18.0.8.0 certain maintenance activities require specific specialized skills and training to ensure they are accomplished correctly and they are to be performed and certified as shown.

- (1) Non-fluorescent dye penetrant inspections of aircraft structure, engine and propellers may be performed and certified by the holder of an appropriately rated Aircraft Maintenance Engineer license or the holder of an appropriate Restricted of the Maintenance Authorization having the full privileges of the holder of an Aircraft maintenance Engineer license.

- (2) Non destructive Inspections, other than those specified in (1), shall be performed and certified by the holder of an appropriate Non Destructive Testing Authorization.
- (3) All welding processes performed on aircraft, aircraft components or appliances shall be performed and certified by the holder of an appropriate Welding Authorization.
- (4) Compass swinging shall be performed or supervised and certified by the holder of an appropriate Compass Swinging Authorization.

**SECTION 18.1.
MODIFICATION AND REPAIR**

18.1.0. GENERAL

18.1.0.0. *Technical Data*

- (a) No aircraft, aircraft component or appliance shall be modified or repaired except in accordance with technical data or approved by the Director.
- (b) A person may submit to the Director for approval technical data relating to the modification or repair of any aircraft, aircraft component or appliance coming within the applicability of this Part. Such data shall be submitted in the form and manner prescribed by the Director.
- (c) The Director may approve technical data relating to the modification or repair of an aircraft, aircraft component or appliance where -
 - (1) he has been furnished with such engineering reports and other material in justification of the data as he may require ; and
 - (2) in the case of a modification, he is satisfied that the aircraft, aircraft component or appliance, when modified in accordance with the data, will comply with airworthiness requirements applicable to the aircraft, aircraft component or appliance, in accordance with CASR 21.95 or CASR 21.97 of attachment to MD KM. 90/93; or
 - (3) in the case of a repair, he is satisfied that where an aircraft, aircraft component or appliance has been repaired in accordance with the data the condition of the part of the aircraft, aircraft component or appliance so repaired will, with regard to aerodynamic and mechanical function, and other qualities effecting airworthiness, be at least equivalent to its original or properly modified condition.

NOTE : Unless a notification to the contrary is issued by the Director, the practices and procedures specified in the relevant manufacturer's manuals may be deemed to be approved.

18.1.0.1. *Persons authorized to perform Modification and Repair.* No person shall perform a modification or repair on any aircraft, aircraft component or appliance, except as provided as follows :

- (1) An approved aircraft maintenance organization may perform modifications and repair as provided in Part 58 of these Regulations ;
- (2) Type Certificate holder may rebuild or modify any product manufactured by him ;

- (3) An aircraft maintenance engineer licensed in Category "A" or Category "C" or a person who works under the direct supervision of such an aircraft maintenance engineer may perform minor repairs and minor modifications on aircraft, aircraft components and appliances as appropriate to his rating(s) :
- (4) The holder of a restricted maintenance authorization or a person who works under the direct supervision of the holder of such an authorization may perform minor repairs and replacements as provided in his letter of authorization.

18.1.0.2. *Persons authorized to certify Modifications and Repairs.* No person shall certify a modification or repair on any aircraft, aircraft component or appliance except provided as follows :

- (1) An approved aircraft maintenance organization may certify modifications and repairs which have been performed by such organization ;
- (2) Type Certificate Holder may certify any work which has been performed by him as provided in (2) of 18.1.0.1 ;
- (3) An aircraft maintenance engineer licensed in Category "A" or Category "C" may certify minor repairs and minor modifications which have been performed by him or under his direct supervision ;
- (4) The holder of a restricted maintenance authorization may certify minor repairs and replacements which have been performed by him or under his direct supervision as provided in (4) of 18.1.0.1.

18.1.0.3. *Inspection and Test Requirements.*

- (a) *General.* A person shall not return an aircraft, aircraft component or appliance to service after modification or repair until he is satisfied that all inspections and tests necessary to prove the conformity of such aircraft, aircraft components or appliance with the approved design drawings and specifications relating thereto have been carried out and that the aircraft, aircraft component or appliance conforms to such drawings and specifications.
- (b) *Fight Testing of Aircraft* Where an aircraft has undergone a modification or repair which may have appreciably changed its flight characteristic or substantially affected its operation in flight, such aircraft shall not be returned to service until a licensed pilot appropriately rated and authorized for the purpose, has test flown the aircraft and certified that its performance and flight characteristics are satisfactory.

18.1.0.4. *Aircraft Operating Limitations.* Where a major repair or major modification to an aircraft results in any change in the aircraft operating limitations or data contained in the approved aeroplane flight manual, appropriate amendments to such limitations or data shall be made in the form and manner approved by the Director.

RECORDS AND LOG ENTRIES.

18.2.0.5. *Log Entries* The following shall be recorded in the appropriate aircraft engine or propeller log book in respect of any modification or repair carried out on an aircraft, aircraft component or appliance :

- (1) A description of the modification or repair ;
- (2) Reference to the applicable approved technical data; and
- (3) The signature and authority reference (aircraft maintenance engineer license number, aircraft maintenance organization or manufacturer approval number, or restricted maintenance authorization number) of the person certifying the modification or repair or alternatively a file reference to the performance records on which the modification or repair has been certified.

NOTE : Approved aircraft maintenance organization and approved manufacturers are required to retain for at least 2 years performance records in respect of all maintenance and modification work performed by them, and reference to such records will be found in each case on the appropriate release note, certificate of maintenance or "serviceable" tag.

Major Repair and Modification Records. The owner of an aircraft, aircraft component or appliance shall retain for the service life of the aircraft, aircraft component or appliance and for one year after its permanent withdrawal from service full particulars of any major structural repairs or major modifications carried out on such aircraft, aircraft component or appliance including approved copies or all technical data used.

SECTION 18.2.

INSPECTION AND CERTIFICATION OF AIRCRAFT
PRIOR TO FLIGHT

18.2.0. GENERAL.

18.2.0.0. *Standard of Performance.* All inspections shall be performed in accordance with practices and procedures approved or specified by, or acceptable to the Director. The inspection of an aircraft used in commercial operations shall be performed in accordance with the relevant operator's maintenance manual.

NOTE : Unless a notification to the contrary is issued by the Director, manufacturer's manuals and service bulletins and technical data bearing the approval number of an approved engineering design organization may be deemed to be approved.

18.2.0.1. *Persons authorized to perform Inspections.* No person shall perform an inspection on any aircraft, aircraft component or appliance except as provided as follows :

- (1) An aircraft maintenance engineer licensed in Category "A" or Category "C" or a person who works under the direct supervision of such an aircraft maintenance engineer may perform inspections on aircraft, aircraft components and appliances as appropriate to his rating (s) :
- (2) The holder of a restricted maintenance authorization, or a person who works under the direct supervision of the holder of such an authorization, may perform inspections as provided in his letter of authorization.

18.2.0.2. *Persons authorized to certify aircraft prior to flight.* No person shall certify prior to flight an aircraft or any part thereof except as provided as follows :

- (1) An aircraft maintenance engineer licensed in Category "A" or Category "C" certify inspections which have been performed by him or under the direct supervision for the issuance of a maintenance release :
- (2) An aircraft maintenance engineer licensed in Category "A" and holding both the airframe rating and the engine rating for a specific type of aircraft may issue a maintenance release in respect of any aircraft of that type and, where required may certify in respect of any aircraft of that type that such aircraft is fit for test flight :
- (3) The holder of restricted maintenance authorization may certify inspections which have been performed by him or under his direct supervision as provided in (2) of 18.2.0.1.

18.2.0.3. *Certification prior to flight.* A person shall not return an aircraft to service or certify an aircraft fit for test flight until he is satisfied :

- (1) That the aircraft has been maintained in accordance with the time-limitations established and approved in the relevant aircraft maintenance specifications and that, where a maintenance release is to be issued, no specified component overhaul or inspection requiring the issue of a maintenance release will fall due before the expiry of the period of validity of the maintenance release ;
- (2) that, where a maintenance release is to be issued any airworthiness directive applicable to such aircraft which would fall due before the expiry of the period of validity of the maintenance release has been complied with ;
- (3) that all modifications, repairs and inspection carried out on the aircraft since the last flight have been performed and certified in accordance with the requirements on this Part; and
- (4) that all defects affecting the safety or airworthiness of the aircraft whether reported by the pilot or discovered during an inspection operation, have been satisfactorily rectified and certified by appropriately authorized persons.

18.2.0.0. RECORDS AND LOG ENTRIES.

18.2.0.1. *Log Entries.* The following shall be recorded in the applicable aircraft, engine or propeller log book in respect of any inspection carried out on an aircraft, aircraft component or appliance for the issuance of a maintenance release :

- (1) A description of the inspection ;
- (2) Reference to the inspection form instruction or manual used ; and
- (3) The maintenance release, or a reference to the file in which the maintenance release is kept.

18.2.1.1. *Form and Disposition of Inspection Forms.*

- (a) An owner shall provide in respect of each aircraft owned by him a series of inspection forms for use in the certification of inspections performed in accordance with the approved aircraft maintenance specification applicable to his aircraft.
- (b) Inspection forms shall be completed and disposed of in a manner acceptable to the Director.

18.2.1.2. *Form and Disposition of the Maintenance Release.*

- (a) An owner shall provide a maintenance release stamp or form for use in the certification of his aircraft for return to service after maintenance. Such form shall bear the title "Maintenance Release" and the following wording :

"I hereby certify that aircraft PK has been maintained and inspected in accordance with the Civil Aviation Safety Regulations and is safe for flight.

Signed A.M.E. Lic. No.

Issued at on A/c hours

Valid until a/c hours or for days whichever is the shorter period."

- (b) The maintenance release shall be completed and disposed of in a manner acceptable to the Director.

APPENDIX 18 - A
EXAMPLES OF MAJOR MODIFICATIONS

18.0.7. RESTRICTED MAINTENANCE AUTHORIZATIONS.

18.0.7.0. *Issuance of Restricted Maintenance Authorizations.*

- (a) The Director may authorize suitable qualified individuals to perform and certify any or all of the following maintenance operations on any aircraft of a specified type or specified types :
- (1) Servicing operations not requiring disassembly other than the removal of non-structural cover plates, cowlings, fairings, etc. ;
 - (2) Inspection other than inspections for the issuance of a maintenance release ;
 - (3) The rectification of minor defects reported by the pilot or found on an inspection during the of period of validity of a maintenance release ;
 - (4) The replacement of specified components and appliances.

18.2.1.3. Change such as the following to an airframe, powerplant, propeller or appliance are considered major modifications.

1. AIRFRAME MAJOR MODIFICATIONS

- (a) Major changes to the basic design or external configuration of any structural component such as:
- Wings
 - Tail surfaces
 - Fuselage
 - Engine mounts
 - Control system
 - Landing gear
 - Hull or floats
 - Elements of components (spars, ribs, fittings, shock absorbers, bracing, cowlings, fairings, balance weights, etc) of an airframe.
 - Hydraulic and electrical actuating systems or components
 - Rotor blades
- (b) All change to the empty weight or empty balance which result in an increase in the certificated maximum weight or alternation of the center of gravity limits of the aircraft.
- (c) Changes to the basic design of the fuel, oil, cooling, heating, pressurization, electrical, hydraulic, deicing, and exhaust

- (d) Modifications to the wing or to fixed or movable control surfaces which affect flutter and vibration characteristics.
- (e) Installation or modification of any system affecting the structural airworthiness, flight behavior, or control of the aircraft.

2. POWERPLANT MAJOR MODIFICATIONS

- (a) Conversion of an aircraft engine from one approved model to another involving any changes in compression ratio, propeller reduction gear, impeller gear ratios or the substitution of major engine parts which requires extensive rework and testing of the engine.
- (b) Modification of the engine by replacing aircraft engine structural parts with parts other than those supplied by the original manufacturer or otherwise specifically approved by the Director.
- (c) Installation of an accessory which has not been approved for the engine
- (d) Removal of accessory that listed as required equipment on the aircraft or engine specification.
- (e) Installation of structural parts other than the type of parts approved for the installation.
- (f) Conversions of any sort for the purpose of using fuel of rating or grade other than that called for in the engine specification.

3. PROPELLER MAJOR MODIFICATIONS.

- (a) Change in blade design
- (b) Changes in hub design
- (c) Changes in governor or control design.
- (d) Installation of a propeller governor or feathering system.
- (e) Installation of propeller deicing system.
- (f) Installation of parts not approved for the propeller.
- (g) Any changes in the design of a balance propeller or its controls.

4. APPLIANCE MAJOR MODIFICATIONS.

- (a) Changes to the basic design configuration or functioning of any appliance.
- (b) For radio communication and navigation equipment, any changes in the basic design which have an effect on frequency stability, noise level, sensitivity, selectivity, distortion, spurious radiation, AVC characteristics, or ability to meet environment test conditions or any other changes which may have an effect on the performance of the equipment.

**APPENDIX 18 - B
EXAMPLES OF MAJOR REPAIRS**

Changes such as the following to an airframe, powerplant, propeller or appliance are considered major repairs.

1. AIRFRAME MAJOR REPAIRS.

- (a) All repairs involving the strengthening, reinforcing, splicing and manufacturing of primary structural members or their replacement, when is by fabrication such as riveting or welding. The following are examples of such members:
- Box beams
 - Monocoque or semi-monocoque wings or control surfaces
 - Wing stringers or chord members
 - Repairs involving the substitution of materials
 - Spars
 - Spar flanges
 - Members of truss-type beams
 - Thin sheet webs of beams
 - Keel and chine members of boat hulls or floats
 - Corrugated sheet compression members which act as flange material of wings or tail surfaces
 - Wing main ribs and compression members
 - Wing or tail surface brace struts
 - Engine mounts
 - Fuselage longerons
 - Members of the side truss, horizontal truss or bulkheads
 - Main seat support braces and brackets
 - Landing gear brace struts
 - Axles
 - Wheels
 - Skis, and ski pedestals
 - Parts of the control system such as control columns, pedals, shafts, brackets, or horns
- (b) The repair of damaged areas in metal or plywood stressed covering exceeding 6 inches in any direction; the repair of portions of skin sheets by making additional seams; splicing of skin sheets.
- (c) Repair of the three or more adjacent wing or control surface ribs, or leading edge of wings and control surfaces between such adjacent ribs.
- (d) Repair of fabric covering involving a greater area than required to repair two adjacent ribs, replacement of fabric on fabric covered parts such as wings, fuselages, stabilizers and controls surfaces.
- (e) Rebuilding, including rebottoming, of removable or integral fuel tanks, and oil tanks.

2. POWERPLANT MAJOR REPAIRS.

- (a) Any maintenance operation requiring (i) the separation or disassembly of a crankcase or crankshaft of an engine equipped with an integral supercharger and/or propeller reduction gearing; (ii) disassembly of a nonfloat type carburetor or fuel injection unit used with such engine; or (iii) top overhaul of such engines.
- (b) Special repairs to structural engine parts by welding, plating, metalizing or other methods.

3. PROPELLER MAJOR REPAIRS.

- (a) Any repair to or straightening of steel blades.
- (b) Repairing or machining of steel hubs.
- (c) Shortening of blades.
- (d) Retipping of wood propellers.
- (e) Replacement of outer laminations on fixed pitch wood propellers.
- (f) Repairing elongated bolt holes in the hub of fixed pitch wood propellers.
- (g) Inlay work on wood blades.
- (h) All repairs to composition blades.
- (i) Replacement of tip fabric.
- (j) Replacement of plastic covering.
- (k) Repair of propeller governors.
- (l) Repair of balance propellers of rotorcraft.
- (m) Overhaul of controllable pitch propellers.
- (n) Repairs to deep dents cuts, scars nicks etc. and straightening of aluminum blades.
- (o) The repair or replacement of internal elements of blades.

4. APPLIANCE MAJOR REPAIRS.

- (a) In general, all complex repair operations requiring the use skilled techniques and/or special tools and test equipment not available to mechanic working outside of an appliance shop.
- (b) For instruments, all repairs to instruments.
- (c) For electronics equipment, the adjustment and calibration of VO, ILS or DME equipment etc.
- (d) For electrical equipment, the rewinding of any electrical accessory field coil.
- (e) For hydraulic accessories, the complete dismantling of complex hydraulic power valves.
- (f) For mechanical accessories, (i) pressure type carburetor overhaul.
- (g) Overhaul of pressure type fuel, oil or hydraulic pumps.

APPENDIX 18 - C
EXAMPLES OF MINOR MODIFICATIONS

Changes such as the following to an airframe, powerplant, propeller or appliance are considered minor modifications.

1. AIRFRAME MINOR MODIFICATION.

- (a) Installation or removal of specific items of optional equipment listed in the aircraft specification when such installation is made in accordance with the manufacturer's instructions.
- (b) The installation or removal of equipment of equal or less weight and in the location as that listed as that optional equipment in the aircraft specification.
- (c) Charges of a minor nature made to Structural and non-structural elements for the purpose of improving the service life or reducing maintenance costs.
- (d) All changes to the empty weight or empty balance which do not result in a increase in the certificate maximum weight or alteration of the center of gravity limits of the aircraft.

2. POWERPLANT MINOR MODIFICATIONS.

- (a) Alterations to supporting brackets or braces of unit of the powerplant which do not adversely effect the structural integrity of such parts.
- (b) Changes to the cowling which do not affect engine cooling, such as revisions to mounting brackets attachments.
- (c) The alteration or conversion of an aircraft engine by simple substitution of parts of different design or addition of DCA approved parts in accordance with approved practices, and in conformity to the engine manufacturer's or DCA instruction.

3. PROPELLER MINOR MODIFICATIONS.

- (a) Initial installation of a propeller spinner
- (b) Changes to the basic design of, or the relocating of, brackets or braces of the propeller controls.
- (c) Changes to the basic design of propeller control rods or cables.

4. APPLIANCE MINOR MODIFICATIONS

- (a) In general, changes to the made in accordance with approved recommendations of the appliance manufacturer, or in accordance with a DGAC Airworthiness Directive are considered to be minor modifications.
- (b) For radio communication and navigation equipment, minor modifications includes but are not limited to substitution of standard parts of one manufacturer for those of another. Such parts include tubes, semiconducting devices such as crystal diodes and transistor, resistors, capacitors, chokes, tube sockets, relays and standard hardware.

APPENDIX 18 - D
EXAMPLES OF MINOR REPAIRS

18.1.2.0. Changes such as the following to an airframe, powerplant, propeller or appliance are considered to be minor repairs.

1. AIRFRAME MINOR REPAIRS.

(a) Nonstructural members. Repairs to nonstructural members which may affect the airworthiness of an aircraft, such as :

- Cowling
- Wing and control surface fairings
- Electrical installations
- Windshields

(b) Tanks. Patching and repairing of leaks in non-integral fuel, oil, hydraulic, and de-icer fluid tanks.

(c) Ribs, leading and trailing edges, tip strips. The repair of :

- not more than two adjacent wing or control surface ribs of a conventional type (wood or metal);
- the leading edge of wing and control surfaces between two adjacent wing or control surface ribs;
- the trailing edge of wing control surfaces, and flaps.
- Wing and control surface tip strips.

(d) Fabric covering. Patching of fabric involving replacement of fabric covering of a surface when such replacement is of an area not greater than that required to repair two adjacent ribs.

(e) Metal or plywood stressed covering. The patching of holes in metal or plywood stressed covering not to exceed 6 inches in any direction when ribs, stringer, bulkheads, and reinforcements are not directly affected.

(f) Replacement of components or complete units such as listed below with parts supplied by the original manufacturer or manufactured in accordance with approved drawings :

- Wings
- Replaceable wing tips
- Control surfaces (fixed and movable) and control cables.
- Wing or control surface bracing (struts or wires).
- Floats
- Landing gear
- Tail wheel assemblies
- Engine mounts (prefabricated and bolted on, not to be welded on).
- Fuel and oil system accessories
- Hydraulic system accessories
- Fuel and oil tanks

- Powerplants controls
- Propeller controls
- Appliances such as instruments, hydraulic or electrical actuating units of components, cabin heaters, radio units, auto pilots.

2. POWERPLANT MINOR REPAIRS

- (a) *Engine top overhauls.* Top overhaul of engines which have neither an integral supercharger nor integral propeller reduction gearing consisting of the following.
 - Removal of cylinders.
 - Grinding valves and removing carbon.
Fitting new ring.
 - Adjustments of valve gear or replacement of parts in valve mechanism outside of the crankcase.
- (b) *Engine complete overhauls.* Complete overhauls of engine which have neither an integral supercharger nor integral propeller reduction gearing.
- (c) *Replacement of components.* The replacement of component not a part of the basic structure of the engine, such as carburetors, magnetos, ignition harnesses, on engines of any horsepower.
- (d) *Replacement of accessories.* The replacements of components such as generators, starter, fuel pumps, vacuum pumps, hydraulic pumps, and oil coolers on engines of any horsepower.

3. PROPELLER MINOR REPAIRS.

- (a) Repairs to dents, cuts, scars, scratches, nicks, leading edge pitting of aluminum blades, provided removal of treatment does not materially affect the strength, weight, balance, or performance of the propeller.
- (b) Repairing dents, cuts, scars, scratches, nicks and small cracks parallel to the grain of wood blades.
- (c) Removal and installation of propellers.
- (d) The assembly and disassembly of propellers to the extent necessary to permit :
 - (i) Assembly of propellers partially disassembled for shipment and not requiring the use of balancing equipment;
 - (ii) The accomplishment of routine servicing and inspection;
 - (iii) Replacement of parts other than those which normally require the use of skilled techniques, special tools and test equipment.

(e) Balancing of Fixed pitch and ground adjustable propellers.

(f) Refinishing of wood propellers.

4. APPLIANCE MINOR REPAIR

Any repair to an appliance which would not be defined as a major appliance repair is considered to be a minor appliance repair.

 MENTERI PERHUBUNGAN

HARYANTO DHANUTIRTO