



**CIVIL AVIATION RULES AND STANDARDS**

**FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA**

**PART 5 — AIRWORTHINESS**

**JUNE 2021**  
**Addis Ababa**

## Part 5 - Airworthiness

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## 5.1 GENERAL

### 5.1.1.1 APPLICABILITY

- (a) This part prescribes the requirements for:-
- (1) Original certification of aircraft and aeronautical products;
  - (2) Supplemental type certificates;
  - (3) Issuance of a Certificate of Airworthiness;
  - (4) Continued airworthiness of aircraft and aeronautical components;
  - (5) Aircraft maintenance and inspection requirements; and
  - (6) Maintenance records and entries.

### 5.1.1.2 DEFINITIONS

- (a) Definitions are contained in ECARAS Part 1.

### 5.1.1.3 ABBREVIATIONS

- (a) The following acronyms are used in Part 5:
- (1) AOC – Air Operator Certificate.
  - (2) AMO – Approved Maintenance Organization.
  - (3) AMT – Aviation Maintenance Technician.
  - (4) ECAA- Ethiopian Civil Aviation Authority
  - (5) ECARAS- Ethiopian Civil Aviation Rules and Standards
  - (6) IA – Inspection Authorization.
  - (7) MEL – Minimum Equipment List.
  - (8) PIC – Pilot in Command.
  - (9) STC – Supplemental type Certificate.
  - (10) TSO – Technical Standard Order.

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## 5.2 CERTIFICATION OF AIRCRAFT AND AERONAUTICAL PRODUCTS

Part 5 presumes that Ethiopia does not presently have the capabilities or demand to issue its own original type certification and will therefore not be the State of Design or State of Manufacture. Ethiopian Civil Aviation Authority will issue its own Certificate of Airworthiness to the aircraft it registers in accordance with this part. Therefore, Ethiopian Civil Aviation Authority is responsible for the continuing airworthiness of aircraft on its registry and for ensuring that non-Ethiopian registered aircraft operated within Ethiopia are maintained in accordance with continuing airworthiness requirements of the State of Registry. .

### 5.2.1.1 APPLICABILITY

- (a) This Part applies to operators of aircraft within Ethiopia;
- (b) No person may operate an aircraft within Ethiopia or apply for registration of an aircraft in Ethiopia, unless that aircraft and the aeronautical products therein have received type certification from the State of Design and production approval from the State of Manufacture by the appropriate regulatory agency of those States in accordance with the requirements of ICAO Annex 8.

### 5.2.1.2 ORIGINAL CERTIFICATION OF AIRCRAFT AND AERONAUTICAL PRODUCTS

### 5.2.1.3 APPLICABILITY

- (a) This Subpart describes the procedures and designation of applicable rules for original type certification of aircraft and related aeronautical products.
- (b) This Subpart is reserved.

### 5.2.1.4 APPLICABLE CODE OF AIRWORTHINESS

- (a) Until Ethiopia develops a comprehensive Code of Airworthiness design, the mandatory requirements and design standards of the State of Design, shall be mandatory on all aircraft registered in Ethiopia;
- (b) The Authority will apply the detailed comprehensive code of airworthiness issued by the State of Design, provided:
  - (1) The issuing State is an ICAO Contracting State;
  - (2) The Code of Airworthiness is in conformance with the Standards of ICAO Annex 8;
  - (3) A copy of the Rules and Standards conforming to the Code of Airworthiness is provided with the application for the Type Acceptance Certificate and is published in the English Language;
  - (4) There is a satisfactory method of updating the Authority's copy of the rules and standards conforming the Code of Airworthiness, throughout the time the aircraft is registered in Ethiopia;
- (c) The Codes of Airworthiness which are accepted and applied by the Authority in the determination for the issuance of a certificate of airworthiness and continuing airworthiness are those of the:
  - (1) United States, Federal Aviation Administration;
  - (2) European Aviation Safety Agency;
  - (3) Canadian Ministry of Transport;

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### 5.2.1.5 ACCEPTANCE OF TYPE CERTIFICATE

- (a) The Authority accepts type certificate based on the satisfactory evidence that the aircraft is in compliance with the mandatory requirements and design standards of the State of Design. Described in IS: 5.2.1.2.2
  - (1) The Authority will not issue type certificates for aircraft or aeronautical products until such time an application is made and the Authority provides suitable rules and standards or provisions for the issuance of an airworthiness certificate, or airworthiness document as appropriate for the product concerned.
  - (2) An applicant intending to import a first of type aircraft or aeronautical product to Ethiopia shall apply to the Authority for an Acceptance Type Certificate, in a form and manner prescribed by the Authority
  - (3) The Authority may accept a type certificate or equivalent document issued by a State of Design in respect of an aircraft or aircraft component if:
    - (4) The type certificate or equivalent document was issued based on an airworthiness code recognized by the Authority;
- (b) The Authority may deny the issuance of an acceptance type certificate if it is considered by the Authority that such issuance is contrary to the public interest, in which case the Authority will notify in writing the applicant of the reasons for the denial;
- (c) Upon acceptance of the type certificate by the Authority, the Authority may, prior to issue of standard or special certificate of airworthiness, require the applicant to comply with any additional requirements as prescribed by the Authority.
- (d) In this Rules and Standards, recognized airworthiness code means standards relating to the design, materials, construction equipment, performance and maintenance of aircraft or aircraft component issued by the State of Design and accepted and prescribed by the Authority.
- (e) No person may apply for registration of an aircraft in Ethiopia unless that aircraft and the aeronautical products therein have received type certification from the State of Design and production approval from the State of Manufacture by the appropriate regulatory agency of those States described in Sec. 5.2.1.2(C).

### 5.3 SUPPLEMENTAL TYPE CERTIFICATES

#### 5.3.1.1 APPLICABILITY

- (a) This Subpart prescribes procedural requirements for the issue of supplemental type certificates.

#### 5.3.1.2 ACCEPTANCE OF A SUPPLEMENTAL TYPE CERTIFICATE

- (a) Any person who proposes to alter a product by introducing a major change in type design, not great enough to require a new application for a type certificate, shall apply for a Supplemental Type Certificate to the regulatory agency of the State of Design that approved the type certificate for that product,
- (b) Or to the State of Registry of the aircraft provided that the State of Registry has the technical expertise

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to evaluate the proposed change in accordance with the type design. The applicant shall apply in accordance with the procedures prescribed by that State.

- (c) No person shall alter a product by introducing a major change in type design before acceptance is granted by the Authority even if the state of design approved the STC.
- (d) The organization proposing modification on its Ethiopian registered aircraft shall submit application to ECAA prior to incorporating the modification regardless of the previous approval of the data package by foreign CAA.
- (e) The Authority, upon receiving a request for a supplemental type certificate for an aircraft registered in Ethiopia shall forward the request to the State of Design.

### 5.3.1.3 MODIFICATION OF AIRCRAFT

- (a) All major modifications and repairs on Ethiopian registered aircraft shall comply with the airworthiness requirements acceptable to the ECAA.
- (b) The Authority will only approve or accept major modification design data traceable to approval from State of Design.
- (c) The modification must meet all the relevant requirements specified in the certification basis of the aeronautical product and the applicant is responsible for substantiating the modification that the modified aircraft/engine/propeller complies with the applicable airworthiness requirements.
- (d) Data submittals for modification application must contain sufficient descriptive and substantiating/compliance data to completely describe the design of the modification or installation, and demonstrate that the modification design meets the applicable rules and standards.
- (e) All modifications must be classified as major or minor prior to submittal of the application to the Authority. Assessment of modification classification shall be referred to the guidelines in ECARAS Part 5 IS:5.1.1.2
- (f) ECAA unapproved and/or unaccepted modified aircraft may be subject to grounding and suspension of Certificate of Airworthiness.
- (g) For major modification, application has to be substantiated by approved modification design data such as Supplemental Type Certificate (STC) traceable to the State of Design.
- (h) The person responsible for the modification must have sound knowledge of aircraft certification and design principles embodied in the aircraft type being modified and shall state any particular requirements to be observed when the modification is completed and before an aircraft, component or equipment is released for service. The following aspects shall be considered:
  - (1) Whether tests or inspections during the progress or after the completion of the modification are necessary to ensure it complies with the specified requirements.
  - (2) The qualifications of persons who may be required to assess completed work and certify that it complies with the approved design.

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- (3) Whether significant changes in the weight and centre of gravity position of the aircraft will occur and if re-weighing or preparation of a new weight and balance report is necessary.
  - (4) Whether the flight or operating characteristics of an aircraft may have been affected by the work and the necessity to have the aircraft inspected and certified as fit for flight and flight tested.
  - (6) Whether amendments are necessary to the aircraft flight manual, maintenance programme, minimum equipment list or any other documents approved for maintenance or operation of the aircraft.  

Note: All such amendments must be approved prior to the first flight after the modification is embodied.
  - (7) Whether there are any amendments of instruction to continuing airworthiness and operational requirements in relation to the modification.
- (i) When flight testing is necessary to demonstrate the embodied modification complies with the applicable airworthiness standards, the applicant shall submit application to ECAA for flight test permit.

### 5.3.1.4 REPAIR OF AIRCRAFT

- (a) Where a repair falls outside the scope of maintenance data as specified in aircraft structural repair manual, then such a repair will require acceptance of the Authority.
- (b) The applicant must classify the repair as major or minor. Assessment of repair classification shall be referred to the guidelines in ECARAS Part 5 IS: 5.1.1.2. All repair design should have been classified prior to submission to the ECAA.
- (c) The Authority will only approve or accept major repair design data traceable to approval from State of Design.
- (d) Applications for repair approval and or acceptance by the Authority shall be made on appropriate form and be submitted to the Authority together with the repair scheme and supporting documents.
- (e) The person responsible for the repair design must have sound knowledge of aircraft certification and design principles embodied in the aircraft type being repaired.

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### 5.3.1.5 COMPATABILITY OF MODIFICATIONS AND REPAIRS

- (a) Consideration should be given during the design process to compatibility between the proposed design change and other existing design changes, such as modifications, repairs and airworthiness directives (AD).
- (b) The operator has responsibility to inform the TC or STC holder for any airworthiness deficiencies discovered in service which relate to the design change. The TC or STC holder has responsibility to assist the operator and the approving airworthiness authority to correct such deficiencies being informed.
- (c) The installer of the modifications or repairs on the aircraft has responsibility to verify compatibility with other existing modifications and repairs before installing any design change.
- (d) The operator has the overall responsibility to ensure the compatibility of all design changes incorporated in their aircraft. The operator should report any design change incompatibilities detected during installation or in service to the TC or STC holder, to the installer and to the approving Authority and State of Registry.

### 5.4 ISSUANCE OF CERTIFICATES OF AIRWORTHINESS

#### 5.4.1.1 APPLICABILITY

- (a) This Subpart prescribes procedures required for the issue of airworthiness certificates and other certifications for aeronautical products registered in Ethiopia.
- (b) Prior to issuing any Certificate of Airworthiness, the Authority will conduct an inspection to determine if the aircraft meets all relevant airworthiness requirements. The applicant will have to furnish to the Authority all the requested information, data, reports, etc., and is required to meet any additional requirements decided by the Authority during the inspection.
- (c) The Authority will issue a certificate of airworthiness for aircraft registered in Ethiopia based on satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements (type certificate) and is in a condition for safe operation.
- (d) The aircraft will be required to be made available for inspection by the Authority at suitable times and for such periods considered necessary by the Authority. The owner/operator shall prepare the aircraft to permit access as necessary and shall perform any checks and tests that may be requested.
- (e) The Authority will issue or render valid a Certificate of Airworthiness for which it intends to claim recognition pursuant to Article 33 of the Convention on International Civil Aviation when it has satisfactory evidence that the aircraft complies with the applicable Standards of ICAO Annex 8 through compliance with appropriate airworthiness requirements.
- (f) The authority may validate a certificate of airworthiness issued by another Contracting State upon registration of the aircraft in Ethiopia for the period specified in that validation certificate. The validation certificate shall be carried with the certificate of airworthiness and, together, shall be considered as the equivalent of a certificate of airworthiness issued by the authority. The validity of the validation certificate shall not extend beyond the period of validity of the certificate of airworthiness or one year, whichever is less.
- (g) Each application for issuance of a Certificate of Airworthiness shall be accompanied with documents from an appropriately approved organization which:
  - (1) state the type, model and manufacturer's serial number of the aircraft;

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- (2) substantiate that the aircraft complies with the airworthiness requirements appropriate to the aircraft type and which are acceptable to the ECAA;
  - (3) substantiate that all airworthiness requirements and special conditions applicable to the aircraft have been complied with;
  - (4) certify in regard to a used aircraft, that the aircraft and its records have been inspected and as far as can be reasonably determined the aircraft is safe to fly subject to the requirements prescribed in the approved flight manual or the Certificate of Airworthiness.
- (h) An aircraft to which a certificate of airworthiness is issued shall be operated in compliance with the terms of that certificate and within the approved operating limitations in its flight manual.
- (i) Upon being registered in Ethiopia, all work on the aircraft shall be undertaken by appropriately approved person or organization or, when otherwise approved, a licensed aircraft maintenance technician. A Certificate of Release to Service shall be issued and attached to the log book or other approved records together with full particulars of the work done.
- (j) When the flight test is required by the Authority for the issue of Certificate of Airworthiness, the owner shall be responsible to ensure that:
- (1) the aircraft and its engine(s) have been certified as fit for flight by appropriately licensed aircraft maintenance engineers.
  - (2) a flight test schedule is prepared and is acceptable to the Authority.
  - (3) the handling characteristics are satisfactory and climb performance equals or exceeds the scheduled performance.
  - (4) the flight tests are conducted by a person or organization acceptable to the Authority and the test may be witnessed by the Authority.
  - (5) a report on the flight tests in an acceptable format shall be submitted to the Authority.
- (k) The general requirements for issuance of Certificate of Airworthiness for new aircraft are as follows:
- (1) Export Certificate of Airworthiness for the aircraft which shall be endorsed with:
    - (i) the requirements with which the aircraft complies giving the title, issue number and effective date.
    - (ii) such deviations from the national requirements as may have been authorized in writing by the Airworthiness Authorities which issue the Certificate.
    - (iii) such additional special conditions that were required before the issue of the Certificate.
  - (2) A list of applicable Airworthiness Directives together with:
    - (i) A declaration of the Airworthiness Directives that had been complied with. Where alternate means of compliance are offered, the means chosen shall be stated.
    - (ii) Identification of Airworthiness Directives that require repetitive compliance. Information as to when the next compliance is due must also be provided.
  - (3) A list of Service Bulletins, including Alert Service Bulletins, Mandatory Service Bulletins complied with on aircraft, engines, propellers (as

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applicable) and equipment.

(4) Statement of Modification Status which shall include:

- (i) Customer options incorporated.
- (ii) Equipment incorporated.

(5) Statement of compliance with mandatory equipment and radio apparatus requirements specified in ECARAS Part 7 – Instruments and Equipment.

(6) A list of defects, if any, that is to be rectified by the applicant at the time of issue of the Export Certificate of Airworthiness.

(7) Equipment list.

(8) Weighing report.

(9) Weight and centre-of-gravity schedule.

(10) Time/life limitations.

(11) Records of compass system and magnetic compass swing.

(12) Noise Certificate; and

(13) Any additional requirements requested by the Authority.

(l) In addition to the requirements in paragraph (k), the following is required for a first-of-type aircraft exported to Ethiopia, unless otherwise notified:

(1) Statement of build standard which shall include the aircraft specification.

(2) A copy of the aircraft and engine type certificates and applicable supplemental type certificates.

(3) Type certificate data sheets or specifications for aircraft, engine and propeller, including any supplemental type specifications.

(4) Wiring diagrams.

(5) Electrical load analysis.

(6) Maintenance Review Board Report where applicable.

(7) Maintenance Planning Data (which should include corrosion prevention and control programme, and structural integrity programme, where applicable)

(8) Master Minimum Equipment List, where applicable.

(9) Noise certificate.

(10) One copy each of the following manuals:

- (i) Flight Manual or Pilot Operating Handbook (in addition to the copy for each aircraft).



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- (ii) Operations Manual (in addition to the copy for each aircraft).
- (iii) Aircraft Maintenance Manual.
- (iv) Engine Maintenance Manual.
- (v) Propeller Maintenance Manual.
- (vi) APU Maintenance Manual.
- (vii) Parts Catalogue.
- (viii) Standard Practices Manual.
- (ix) Structural Repair Manual.
- (x) Structurally Significant Items.
- (xi) Loading Procedures Manual.
- (xii) Weight and Balance Manual.
- (xiii) Non-destructive Testing Manual.

(11) Complete set of Service Bulletins for aircraft, engine, propeller and APU. Amendment service for the above documents must be provided to the Authority

- (m) In addition to the requirements in paragraph (k) and, where applicable, in paragraph (l), the following is also required for a used aircraft:
- (1) A complete history of past operational uses of the aircraft.
  - (2) A complete history of the aircraft, engines, propellers, components and equipment including: the number of landings and pressurization cycles; the maintenance program to which the aircraft has previously been maintained, including previous check cycle and future check cycle.

Note: The operator/owner shall be required to show proof that the maintenance program is adequate based on the reliability programme of the previous operator or its equivalent.

- (3) The time in service since new, of any components of the aircraft, engines, propellers or equipment which are subject to mandatory life limitations.
- (4) The time in service since new and since overhaul of any components of the aircraft, engines, propellers or equipment which are subject to an approved overhaul period.
- (5) Details of all changes of major structural components such as wings, tailplanes, helicopter rotors or transmission components and histories of the replacing components.
- (6) Details of major structural repairs including the nature of damage in each case.
- (7) The particulars and results of airworthiness acceptance tests.

### 5.4.1.2 ELIGIBILITY

- (a) Any registered owner of Ethiopian registered aircraft, or agent of the owner, may apply for an

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airworthiness certificate for that aircraft.

- (b) Each applicant for an airworthiness certificate shall apply in a form and manner acceptable to the Authority.

### 5.4.1.3 AIRCRAFT IDENTIFICATION

- (a) Each applicant for a certificate of airworthiness shall show that the aircraft has the proper identification plates.

### 5.4.1.4 CLASSIFICATIONS OF AIRWORTHINESS CERTIFICATES

- (a) A standard Certificate of Airworthiness will be issued for aircraft in the specific category and model designated by the State of Design in the type certificate. The types of standard certificates of airworthiness includes:-

- (1) Normal;
- (2) Utility;
- (3) Acrobatic;
- (4) Transport;
- (5) Commuter;
- (6) Balloon;
- (7) Other.

- (b) A Special Airworthiness Certificate will be issued for aircraft that do not meet the requirements of the State of Design for a standard airworthiness certificate. The types of special airworthiness certificates include:-

- (1) Primary;
- (2) Restricted;
- (3) Limited;
- (4) Provisional
- (5) Experimental
- (6) Special flight permits;
- (7) Other.

### 5.4.1.5 ISSUANCE OF A STANDARD AIRWORTHINESS CERTIFICATE

- (a) The Authority will issue a standard certificate of airworthiness if:-

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- (1) The applicant presents evidence to the Authority that the aircraft conforms to a type design approved under a type certificate or a supplemental type certificate and to the applicable Airworthiness Directives of the State of Design.
  - (2) The aircraft has been inspected in accordance with the performance rules of section 5.6 of this Rules and Standards for inspections and found airworthy by persons authorized by the Authority to make such determinations within the last 30 calendar days; and
  - (3) The Authority finds after an inspection that the aircraft conforms to type design and is in condition for safe operation.
  - (4) There is flight test report justifying the aircraft meets applicable airworthiness and performance standards.
- (b) The Authority issues a certificate of airworthiness to the aircraft upon registration of the aircraft in Ethiopia and on the basis of Export certificate of airworthiness issued by another Contracting State as satisfactory evidence, in whole or in part, that the aircraft complies with the applicable requirements of this Part and upon fulfillment of the conditions stated in 5.4.1.5 (a) above.
  - (c) Ethiopian Civil Aviation Authority accepts an Export Certificate of Airworthiness as part of evidence for issuance of Ethiopian certificate of airworthiness if the Export Certificate of Airworthiness issued by a Contracting State is not more than sixty (60) days since issued.
  - (d) The Standard Certificate of Airworthiness shall contain the information in IS 5.4.1.5
  - (e) The Standard Airworthiness Certificate shall be issued in English language.

### 5.4.1.6 ISSUANCE OF SPECIAL FLIGHT PERMITS

- (a) The Authority may issue a Special Flight Permit to an aircraft that is capable of safe flight, but unable to meet applicable airworthiness requirements, for the purpose of:-
  - (1) Flying to a base where repairs, alterations, maintenance, or inspections are to be performed, or to a point of storage;
  - (2) Testing after repairs, alterations, or maintenance have been performed;
  - (3) Delivering or exporting the aircraft;
  - (4) Evacuating aircraft from areas of impending danger; and
  - (5) Operating at weight in excess of the aircraft's maximum Certified Takeoff Weight for flight beyond normal range over water or land areas where adequate landing facilities or appropriate fuel is not available. The excess weight is limited to additional fuel, fuel-carrying facilities, and navigation equipment necessary for the flight.
- (b) The Authority may issue a special flight permit with continuing authorization issued to an aircraft that may not meet applicable airworthiness requirements but are capable of safe flight, for the purpose of flying aircraft to a base where maintenance or alterations are to be performed. The permit issued under this paragraph is an authorization, including conditions and limitations for flight, which is set forth in the AOC Holder's specific operating provisions. This permit under this paragraph may be issued to an AOC Holder certificated under Part 9.
- (c) In the case of Special Flight Permits, the Authority shall require a properly executed maintenance endorsement in the aircraft permanent record by a person or organization, authorized in accordance to

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Part 5, stating that the subject aircraft has been inspected and found to be safe for the intended flight.

- (d) The operator shall obtain all required over flight authorizations from countries to be over flown on flights outside Ethiopia.

### 5.4.1.7 CONDITIONS ON THE SPECIAL FLIGHT PERMIT

- (a) A person shall not fly an aircraft on a special flight permit unless that person has complied with conditions of this Regulation.
- (b) A person who flies an aircraft on a special flight permit referred in 5.4.1.6 shall ensure that:
  - (1) The flight is made under the supervision of a person approved by the Authority for such flight, subject to any additional conditions which may be specified in the permit;
  - (2) A copy of the permit is carried on board the aircraft at all times when the aircraft is operating under the conditions of the permit;
  - (3) The aircraft registration markings assigned to the aircraft is displayed;
  - (4) No persons or property are carried on board for hire or reward;
  - (5) Only persons essential for the safe operation of the aircraft, who must be advised of the contents of the permit, are carried on the aircraft.
  - (6) The aircraft is operated only by flight crew holding appropriate type ratings or validations with sufficient experience to appreciate the reasons for the aircraft non-compliance to the prescribed airworthiness standards;
  - (7) The flight is conducted in accordance with applicable flight operating rules and procedures of the States of the intended routing;
  - (8) The routing is such that areas of heavy air traffic, areas of heavy human concentration of a city town or settlement or any other areas where the flight might create hazardous exposure to persons or property are avoided;
  - (9) The flight is performed in accordance to the performance limitations prescribed in the aircraft flight manual and any other limitation that the Authority may impose on such flight;
  - (10) All flights are conducted prior to the expiry date of the special flight permit or at any other time the Authority declares so in writing; and
  - (11) The aircraft shall not depart for the flight on a special flight permit unless the aircraft has on board the required authorizations from the State(s) of intended routing.

### 5.4.1.8 DURATION OF CERTIFICATES OF AIRWORTHINESS

- (a) A certificate of airworthiness or special airworthiness certificate is effective as follows unless sooner surrendered, suspended or revoked, or a special termination date is otherwise established by the Authority:-
  - (1) A Standard Certificate of Airworthiness shall be renewed every year.
  - (2) A special flight permit is valid for the period of time specified on the permit.
- (b) The continuing airworthiness of the aircraft shall be determined by a periodical inspection performed at

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appropriate intervals having regard to lapse of time and type of service.

- (c) Failure to maintain an aircraft in an airworthy condition as defined by the appropriate airworthiness requirements of the Authority shall render the aircraft ineligible for operations until the aircraft is restored to an airworthy condition and the certificate of airworthiness shall not be in force for such time.
- (d) The application and all documents required for renewal of Certificate of Airworthiness shall be submitted at least fifteen (15) days prior to the expiry date of the Certificate of Airworthiness.
- (e) The renewal of a Certificate of Airworthiness is dependent on evidence being provided that the aircraft complies with the appropriate airworthiness requirements and is airworthy.
- (f) Inspection of the aircraft is required and all relevant records shall be reviewed prior to the renewal of the Certificate of Airworthiness. The depth and extent of the inspection will depend on:
  - (1) The age of the aircraft, areas and types of operation and conditions of storage.
  - (2) The extent of any unscheduled work that has been carried out on the aircraft since the last renewal following such events as serious or persistent defects, defects or damages requiring major repairs or modifications, inspections completed following hard or overweight landings or abnormal stresses during flight or on the ground, corrosion in major structure, etc.
  - (3) Evidence that the approved maintenance schedules or approved overhaul and/or replacement periods for the aircraft and its components have been fully observed.
  - (4) Evidence that airworthiness requirements or instructions, such as mandatory modifications and inspections, airworthiness directives, etc., prescribed or approved by the Authority, for the aircraft and its components, have been complied with fully.
  - (5) Evidence of, observance of the aircraft or component manufacturers' recommendations, such as service bulletins, service letters, etc., which may affect the airworthiness of the aircraft.
  - (6) Prior to renewal of the Certificate of Airworthiness the aircraft is required to be made available for survey by the Authority. For the inspection the operator/owner shall have the aircraft prepared for inspection in an acceptable condition to enable tests and inspections to be made. Additional work may be required by the Authority following a survey of the aircraft.
  - (7) If a flight test is required by the Authority, the results of the test and related test information and data shall be submitted in an acceptable format, to the Authority. In lieu of an annual flight test, a programme for aircraft performance and engine condition monitoring must be implemented.
- (g) Whenever the validity period of the certificate of airworthiness expires for any reason, the aircraft will be required to fly a test flight so that it can be justified by test flight report that the aircraft is airworthy and can fly safely.
- (h) A Certificate of Airworthiness shall automatically cease to be valid at any time when;
  - (1) The aircraft sustains a major damage that affects its airworthiness.
  - (2) The aircraft could not be maintained in an airworthy condition.
  - (3) The aircraft is removed from the Ethiopian Civil Aircraft Register.
  - (4) Revoked by the Authority

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### 5.4.1.9 COOPERATION AMONG STATES FOR CONTINUING AIRWORTHINESS INFORMATION INCLUDING AIRWORTHINESS DIRECTIVES

- (a) Upon registration of an aircraft in Ethiopia, the Authority will notify the State of Design of the registration of the aircraft in Ethiopia, and request that the Authority receives any and all mandatory continuing airworthiness information (Airworthiness Directives) addressing that aircraft, airframe, aircraft engine, propeller, appliance, or component part and any requirements for the establishment of specific continuing airworthiness programs.
- (b) Whenever the State of Design considers that a condition in an aircraft, airframe, aircraft engine, propeller, appliance, or component part is unsafe as shown by the issuance of an Airworthiness Directive by that State, the Authority will make the requirements of such airworthiness directives apply to Ethiopian registered civil aircraft of the type identified in that Airworthiness Directive
- (c) The Authority may identify and distribute respectively manufacturer's service bulletins and other sources of data of mandatory continuing airworthiness information received from the State of Design and control and monitor for mandatory compliance pertaining to affected aircraft in Ethiopia.
- (d) No person shall operate or permit the operation of Ethiopian registered aircraft to which an Airworthiness Directive applies, or Ethiopian registered aircraft fitted with an aircraft component to which an Airworthiness Directive applies, unless that person ensures that the aircraft complies with each applicable Airworthiness Directive by the compliance time specified in the Airworthiness Directive.
- (e) Ethiopian Civil Aviation Authority shall ensure that sensitive aviation security information is not transmitted when distributing mandatory continuing airworthiness information which it may issue as the State of Registry.
- (f) Ethiopian Civil Aviation Authority shall ensure that sensitive aviation security information is securely transmitted to the appropriate authority in the State of Design in accordance with applicable security regulations.

### 5.4.1.10 AMENDMENT OF AIRWORTHINESS CERTIFICATE

- (a) The Authority may amend or modify a Certificate of Airworthiness or a special airworthiness certificate:-
  - (1) Upon application from an owner or operator.
  - (2) On its own initiative.
- (b) Amendment may be made under the following conditions:
  - (1) Alteration; (STC or amended TC).
  - (2) A change to the authority and basis for issue.
  - (3) A change in the aircraft model.
  - (4) A change in the operating limitations for an aircraft with a special airworthiness certificate.

### 5.4.1.11 TRANSFER OR SURRENDER OF A CERTIFICATE OF AIRWORTHINESS

- (a) An owner shall transfer a certificate of airworthiness:-

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- (1) To the lessee upon lease of an aircraft within or outside Ethiopia.
  - (2) To the buyer upon sale of the aircraft within Ethiopia.
- (b) An owner shall surrender the certificate of airworthiness for the aircraft to the issuing Authority upon sale of that aircraft outside of Ethiopia.

### 5.4.1.12 COMMERCIAL AIR TRANSPORT

The Authority will consider an airworthiness certificate valid for commercial air transport only when accompanied by operations specifications issued by the Authority which identifies the specific types of commercial air transport authorized.

### 5.4.1.13 DISPLAY OF CERTIFICATE OF AIRWORTHINESS

No person may operate a civil aircraft in Ethiopia or registered in Ethiopia unless the Certificate of Airworthiness required by this subpart, or a special flight permit, is displayed at the cabin or cockpit entrance so that it is legible to the passengers or crew.

### 5.4.1.14 AIRCRAFT LIMITATIONS AND INFORMATION

Each aircraft shall be provided with a flight manual, placards or other documents stating the approved limitations within which the aircraft is considered airworthy as defined by the appropriate airworthiness requirements and additional instructions and information necessary for the safe operation of the aircraft

### 5.4.1.15 DAMAGE TO AIRCRAFT

- (a) When an aircraft has sustained damage, the Authority shall judge whether the damage is of a nature such that the aircraft is no longer airworthy as defined by the appropriate airworthiness requirements.

Note: The operator shall present full documentation to justify that the aircraft can safely fly before resuming any further flight. The documents shall be in compliance with the appropriate manufacturer airworthiness requirements. Please note that all the judgments shall be per the manufacturer documents.

- (b) If the damage is sustained or ascertained when the aircraft is in the territory of another Contracting State, the authorities of the other Contracting State shall be entitled to prevent the aircraft from resuming its flight on the condition that they shall advise the Authority immediately, communicating to it all details necessary to formulate the judgment referred to in 5.4.1.16 (a).
- (c) When the Authority considers that the damage sustained is of a nature such that the aircraft is no longer airworthy, it shall prohibit the aircraft from resuming flight until it is restored to an airworthy condition. The Authority may, however, in exceptional circumstances, prescribe particular limiting conditions to permit the aircraft to fly a noncommercial air transport operation to an aerodrome at which it will be restored to an airworthy condition. In prescribing particular limiting conditions the Authority shall consider all limitations proposed by the Contracting State that had originally, in accordance with 5.4.1.16 (b) prevented the aircraft from resuming its flight. That Contracting State shall permit such flight or flights within the prescribed limitations.
- (d) When the Authority considers that the damage sustained is of a nature such that the aircraft is still airworthy, the aircraft shall be allowed to resume its flight.

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## 5.5 CONTINUED AIRWORTHINESS OF AIRCRAFT AND AERONAUTICAL COMPONENTS

### 5.5.1.1 APPLICABILITY

- (a) This Subpart prescribes rules governing the continued airworthiness of civil aircraft registered in Ethiopia whether operation inside or outside the borders of Ethiopia.

### 5.5.1.2 GENERAL

- (a) No person may perform maintenance, preventive maintenance, or modifications on an aircraft other than as prescribed in these Rules and Standards.
- (b) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitation section unless the mandatory replacement times, inspection intervals, and related procedures specified in that section or alternative inspection intervals and related procedures set forth in the operations specifications approved under part 9, or in accordance with the inspection program approved under Part 8 have been complied with.
- (c) No person may operate an aircraft, aeronautical product, or accessory, to which an Airworthiness Directive applies, issued either by the State of Design or State of Manufacture and adopted for Ethiopian -registered aircraft by the Authority, or by the State of Registry for aircraft operated within Ethiopia except in accordance with the requirements of that Airworthiness Directive.
- (d) When the Authority determines that an airframe or aeronautical product has exhibited an unsafe condition and that condition is likely to exist or to develop in other products of the same type design, the Authority may issue an Airworthiness Directive prescribing inspections and the conditions and limitations, if any, under which those products may continue to be operated.
- (e) Upon receipt of mandatory continuing airworthiness information from the State of Design, the Authority shall adopt the mandatory information directly or assess the information received and take appropriate action.
- (f) The Authority shall determine the continuing airworthiness of an aircraft in relation to the appropriate airworthiness requirements in force for that aircraft.
- (g) The Authority shall adopt requirements to ensure the continuing airworthiness of the aircraft during its service life, including requirements to ensure that the aircraft:
  - (i) Continues to comply with the appropriate airworthiness requirements after a modification, a repair or the installation of a replacement part; and
  - (ii) Is maintained in an airworthy condition and in compliance with the applicable maintenance requirements.
- (h) The Authority shall report all mandatory continuing airworthiness information which it, as the State of Registry, originated in respect of that aircraft to the appropriate State of Design.

### 5.5.1.3 RESPONSIBILITY FOR AIRWORTHINESS

- (a) The registered owner or operator of an aircraft or, in the case of a leased aircraft, the lessee shall be responsible for maintaining the aircraft in an airworthy condition by ensuring that:-
  - (1) All maintenance, overhaul, alterations and repairs which affect airworthiness of aircraft are performed as prescribed by the Authority and in case of leased aircraft, State of Registry.



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- (2) Maintenance personnel make appropriate entries in the aircraft maintenance records certifying that the aircraft is airworthy;
  - (3) The approval for return to service (maintenance release) is completed to the effect that the maintenance work performed has been completed satisfactorily and in accordance with the prescribed methods; and
  - (4) In the event there are open discrepancies, the maintenance release includes a list of the uncorrected maintenance items for which temporary relief is provided in the MEL and these items are made a part of the aircraft permanent record.
- (b) The owner or operator of an airplane over 5,700 kg maximum certificated take-off mass shall obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and shall implement resulting actions considered necessary in accordance with a procedure acceptable to the Authority.
  - (c) The owner or operator of an aircraft is responsible that maintenance work on his aircraft is conducted in accordance with all applicable airworthiness requirements and the aircraft is maintained in an airworthy condition. The owner or operator of an aircraft shall ensure that:
    - (1) All maintenance, mandatory modifications and inspections, overhauls or replacements on the aircraft, its engines, components or equipment are completed within any required periods and in accordance with the approved maintenance programs, or other approved worksheets as applicable.
    - (2) Unless otherwise agreed by the Authority, all work is undertaken by an approved maintenance organization.
    - (3) The approved maintenance organization is notified of the work to be undertaken at each scheduled check or inspection, including rectification of defects or damage and any mandatory work to be completed unless the maintenance programs adequately specify such work as may be applicable.
    - (4) The aircraft is not flown unless all work has been completed and certified on documents appropriate for the work and the pilot is notified of the status of the aircraft.
    - (5) When an aircraft has had abnormal loads applied in flight, experienced hard or overweight landings, or been struck by lightning, it shall be inspected in accordance with the manufacturers requirements or other programs approved by the Authority and the results of the inspection plus details of repairs made are entered in the aircraft log book or other approved records and when appropriate the aircraft technical log.
    - (6) Maintenance programs and worksheets pertinent to his aircraft, components or equipment are revised whenever modifications to the aircraft or changes in maintenance practices or category of operation cause them to be inapplicable. Such revisions must be approved by the Authority and distributed to all persons or organizations responsible for maintenance of his aircraft.
    - (7) Particulars of all work completed on his aircraft are, as appropriate, entered in the technical log, or other appropriate log book or approved records system together with the applicable certification document.
    - (8) Approved data and documents are revised as soon as possible after receipt of amendment advice from the manufacturer and appropriate staff are advised of amendments that affect airworthiness.
    - (9) Where the flight or operating characteristics of the aircraft or its components may have been affected by maintenance or other work, the aircraft shall not be released to service until it has been certified as fit for flight and tested in flight in accordance with an approved test schedule, unless other procedures have been approved.
    - (10) The effect of the work on the empty weight and centre of gravity position of the aircraft shall be calculated. Where significant changes have occurred the results shall be submitted to Authority who will determine whether re-weighing and/or preparation of a new weight schedule is required.

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- (11) The Authority and authorized officers are permitted access to his aircraft and establishment to assess whether these requirements are being observed; and, to inspect documents, aircraft, components, equipment, or work in progress to assess the competence and diligence of staff engaged in aircraft maintenance and other work.

### 5.5.1.4 MAINTENANCE AND OPERATIONAL EXPERIENCE

- (a) The owner or operator of an airplane over 5,700 kg or helicopter over 3175 kg maximum certificated take-off mass shall monitor and assess maintenance and operational experience with respect to continuing airworthiness and have a system whereby information on faults, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of the aircraft is transmitted to the organization responsible for the type design of the aircraft. Whenever this information relates to an engine or propeller, such information shall be transmitted to both the organization responsible for engine or propeller type design and the organization responsible for aircraft type design. Where a continuing airworthiness safety issue is associated with a modification, the owner or operator shall report the above information to the organization responsible for the design of the modification.
- (b) The owner or operator and maintenance organizations shall report to the Authority in respect of airplanes over 5,700 kg and helicopters over 3,175kg maximum certificated take-off mass the service information required by the authority according to the procedure, actable by the Authority.
- (c) The owner or operator and maintenance organizations shall transmit to the organization responsible for the type design of aircraft in respect of airplanes over 5,700 kg and helicopters over 3,175 kg maximum certificated take-off mass information on faults, malfunction, defects and other occurrences that cause or might cause adverse effect on the continuing airworthiness of the aircraft

### 5.5.1.5 REPORTING OF FAILURES, MALFUNCTIONS, AND DEFECTS

Owners and/or operators of aeroplanes over 5700 kg or helicopters over 3175 kg maximum certificated take-off mass shall report to the Authority and the organization responsible for the type design of the aircraft any failures, malfunctions, or defects that result in at least the following:-

Fires during flight and whether the related fire-warning system properly operated;

Fires during flight not protected by a related fire-warning system;

False fire warning during flight;

- (1) An aircraft component that causes accumulation or circulation of smoke, vapour, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;
- (2) Engine shutdown during flight because of flameout;
- (3) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;
- (4) Engine shutdown during flight due to foreign object ingestion or icing;
- (5) Shutdown during flight of more than one engine;
- (6) A propeller feathering malfunction or inability of the system to control over speed during flight;
- (7) A fuel or fuel-dumping system failure that affects fuel flow or causes hazardous leakage during flight;
- (8) An unintended landing gear extension or retraction, or opening or closing of landing gear doors during flight;

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- (9) Brake system components failure that results in loss of brake actuating force when the aircraft is in motion on the ground;
- (10) Aircraft structure that requires major repair;
- (11) Cracks, permanent deformation, or corrosion of aircraft structure, if more than the maximum acceptable to the manufacturer or the Authority;
- (16) Aircraft components or systems malfunctions that result in taking emergency actions during flight (except action to shut down an engine);
- (17) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected technical difficulties or malfunctions;
- (18) Any abnormal vibration or buffeting caused by a structural or system malfunction, defect, or failure; and
- (19) A failure or malfunction of more than one attitude, airspeed, or altitude instrument during a given operation of the aircraft.

An engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

- (b) Owners or operators of aircraft over 5,700 kg maximum take-off weight shall report to the Authority:-
  - (1) The number of engines removed prematurely because of malfunction, failure or defect, listed by make and model and the aircraft type in which it was installed; and
  - (2) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed.
- (c) Each report required by this Subsection shall:-
  - (1) Be made within 3 days after determining that the failure, malfunction, or defect required to be reported has occurred; and
  - (2) Include as much of the following information as is available and applicable:-
    - (i) Aircraft serial number;
    - (ii) When the failure, malfunction, or defect is associated with an article approved under a TSO authorization, the article serial number and model designation, as appropriate;
    - (iii) When the failure, malfunction or defect is associated with an engine or propeller, the engine or propeller serial number, as appropriate;
    - (iv) Product model;
    - (v) Identification of the part, component, or system involved, including the part number; and
    - (vi) Nature of the failure, malfunctions, or defects.

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- (d) The Authority shall upon receipt of the report for foreign registered aircrafts operating in Ethiopia, submit the report to the State of Registry.

### 5.6 AIRCRAFT MAINTENANCE AND INSPECTION REQUIREMENTS

#### 5.6.1.1 APPLICABILITY

- (a) This Subpart prescribes rules governing the maintenance and inspection of any aircraft having a Certificate of Airworthiness issued by Authority or associated aeronautical products.

#### 5.6.1.2 GENERAL REQUIREMENTS FOR MAINTENANCE AND INSPECTIONS

- (a) No person may operate an aircraft unless the aircraft and its components are maintained and inspected in accordance with ECAA approved maintenance program and/or an inspection program approved by the manufacturer and acceptable to the Authority. Owners or operators of Ethiopian registered aircraft shall prepare and submit maintenance program, detailing the maintenance required at specific intervals on the aircraft, to the Authority for approval. The operator of any Ethiopian registered aircraft shall have Ethiopian Civil Aviation Authority approved maintenance program for its aircraft.
- (b) The maintenance program shall include a description of the aircraft and components and recommended methods for the accomplishment of maintenance tasks. Such information shall include guidance on defect diagnosis.
- (c) The maintenance program shall include the maintenance tasks and the recommended intervals at which these tasks are to be performed. (the period at which systems, components or equipment are inspected, checked, tested, calibrated etc and cleaned, lubricated, adjusted etc. as applicable and the practices and procedures to be followed).
- (d) Maintenance tasks and frequencies that have been specified as mandatory by the State of Design in approval of the type design shall be identified in the maintenance program.
- (e) A statement specifying the procedures for recording aircraft time in service, the periods at which scheduled inspections and other work are to be done.
- (f) A program detailing components or equipment which are to be overhauled or retired from service at specified calendar (elapsed) time, or flying time periods or other approved service life period.
- (g) A maintenance programme for each aeroplane shall contain when applicable, a continuing structural integrity programme (SIP) which includes at least:
  - (1) supplemental inspections;
  - (2) corrosion prevention and control;
  - (3) structural modification and associated inspections;
  - (4) repair assessment methodology; and
  - (5) widespread fatigue damage (WFD) review;
- (h) When applicable, condition monitoring and reliability programme descriptions for aircraft systems, components and engines.
- (i) The maintenance program shall have a maintenance release process, including signed documentation, in a manner satisfactory to the Authority, indicating that the maintenance performed has been

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completed satisfactorily. A maintenance release shall contain a certification including:-

- (1) Basic details of the maintenance carried out;
- (2) Date such maintenance was completed;
- (3) When applicable, the identity of the approved maintenance organization, AMT, or AOC holder; and
- (5) The identity of the person or persons signing the release.

(j) The maintenance programme shall also include the following:

(1) Servicing procedures for each aircraft type including:-

- (i) Procedures for refuelling, defuelling and replenishment of oils, fluids and gases;
- (ii) The approved specification and/or grade of fuel, oil, water methanol, hydraulic fluids, oxygen etc required for each aircraft type;
- (iii) The system of quality control to be observed by the operator in order that:
  - (a) work undertaken by other organizations and persons during the servicing of an aircraft is done correctly and safely; and
  - (b) adequate measures are taken by refuelling agencies to ensure the correct products are always supplied and that the likelihood of contamination and deterioration of petroleum products is minimal.

- (2) Policy for the use of manufacturer's manuals and field service information.
- (3) Rectification of an unserviceable or inoperative component or equipment and the class of person who may certify that an aircraft may continue in service with an unserviceable or inoperative component or equipment in accordance with the minimum equipment list.
- (4) Procedures for applying to ECAA for concession or approval, of a change or variation, in compliance with a mandatory requirement or an approved maintenance schedule requirement.
- (5) The procedures to be observed for work undertaken on behalf of the operator by other organizations; and the procedures for certification of such work and issue of the necessary certificates.
- (6) The procedures for the use of aircraft components, equipment and materials in maintenance or other work when an aircraft is away from Ethiopia.

(k) The owner or operator shall use one of the following inspection programs as appropriate for the aircraft and the type of operation.

- (1) Annual inspection,
- (2) Annual/100 hour inspections,
- (3) Progressive, or
- (4) Continuous airworthiness maintenance program.

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- (l) The design and application of the operator's maintenance programme shall observe Human Factors principles.

### 5.6.1.3 PERSONS AUTHORISED TO PERFORM MAINTENANCE, PREVENTIVE MAINTENANCE, AND ALTERATIONS

- (a) No person may perform any task defined as maintenance on an aircraft or aeronautical products, except as provided in the following:-
  - (1) A pilot licensed by the Authority may perform preventive maintenance on any aircraft owned or operated by that pilot so long as the aircraft is not listed for use by an AOC holder.
  - (2) A person working under the supervision of an aviation maintenance technician may perform the maintenance, preventive maintenance, and alterations that the supervisory aviation maintenance technician is authorized to perform:-
    - (i) If the supervisor personally observes the work being done to the extent necessary to ensure that it is being done properly, and
    - (ii) If the supervisor is readily available, in person, for consultation.
  - (3) A licensed aviation maintenance technician may perform or supervise the maintenance or alteration of an aircraft or aeronautical product for which he or she is rated subject to the limitation of Part 2 of these rules and standards.
  - (4) An AMO may perform aircraft maintenance within the limits specified by the Authority.
  - (5) The AOC holder may perform aircraft maintenance as specified by the Authority.
  - (6) A manufacturer holding an AMO may:-
    - (i) Rebuild or alter any aeronautical product manufactured by that manufacturer under a type or production certificate;
    - (ii) Rebuild or alter any aeronautical product manufactured by that manufacturer under a TSO authorization, a Parts Manufacturer Approval by the State of Design, or Product and Process Specification issued by the State of Design; and
    - (iii) Perform any inspection required by Part 8 on aircraft it manufactures, while currently operating under a production certificate or under a currently approved production inspection system for such aircraft.

### 5.6.1.4 AUTHORISED PERSONNEL TO APPROVE FOR RETURN TO SERVICE

- (a) No person or entity, other than Authorized, may approve an aircraft, airframe, aircraft engine, propeller, appliance, or component part for return to service after it has undergone maintenance, preventive maintenance, rebuilding, or alteration, except as provided in the following:
  - (1) A pilot licensed by the Authority may return his or her aircraft to service after performing authorized preventive maintenance.

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- (2) A licensed aviation maintenance technician may approve aircraft and aeronautical products for return to service after he or she has performed, supervised, or inspected its maintenance subject to the limitation of Part 2, Section 2.4.4 of Ethiopian Civil Aviation Rules and Standards.
- (3) An AMO may approve aircraft and aeronautical products for return to service as provided in the operations specifications approved by the Authority.
- (4) An AOC holder may approve aircraft and aeronautical products for return to service as specified by the Authority.

### 5.6.1.5 PERSONS AUTHORISED TO PERFORM INSPECTIONS

- (a) No person, other than the Authorized, may perform the inspections required by 8.2.1.7 for aircraft and aeronautical products prior to or after it has undergone maintenance, preventive maintenance, rebuilding, or alteration, except as provided in the following:
  - (1) An aviation maintenance technician may conduct the required inspections of aircraft and aeronautical products for which he or she is rated and current.
  - (2) An AMO may perform the required inspections of aircraft and aeronautical products as provided in the operations specifications approved by the Authority.
  - (3) An AOC holder may perform the required inspections of aircraft and aeronautical products in accordance with specifications issued by the Authority.

### 5.6.1.6 PERFORMANCE RULES: GENERAL

- (a) Each person performing maintenance, preventive maintenance, or alteration on an aeronautical product shall use the methods, techniques, and practices prescribed in:-
  - (1) The current manufacturer's maintenance manual or instructions for Continued Airworthiness prepared by its manufacturer; and
  - (2) Additional methods, techniques and practices required by the Authority; or methods, techniques and practices designated by the Authority where the manufacturer's documents were not available.
- (b) Each person shall use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices. If the manufacturer involved recommends special equipment or test apparatus, the person performing maintenance shall use that equipment or apparatus or its equivalent acceptable to the Authority.
- (c) Each person performing maintenance, preventive maintenance, or alteration on an aeronautical product shall do that work in such a manner, and use materials of such a quality, that the condition of the aeronautical product worked on will be at least equal to its original or properly altered condition with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness.
- (d) The methods, techniques, and practices contained in an AOC holder's maintenance control manual and continuous maintenance program, as approved by the Authority, will constitute an acceptable means of compliance with the requirements of this subsection.



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### 5.6.1.7 PERFORMANCE RULES: INSPECTIONS

- (a) General. Each person performing an inspection required by the Authority shall perform the inspection in accordance with the instructions and procedures so as to determine whether the aircraft, or portion(s) thereof under inspection, meets all applicable airworthiness requirements.
- (b) Rotorcraft. Each person performing an inspection required on a rotorcraft shall inspect the following systems in accordance with the maintenance manual or Instructions for Continued Airworthiness of the manufacturer concerned:-
  - (1) The drive shafts or similar systems;
  - (2) The main rotor transmission gear box for obvious defects;
  - (3) The main rotor and centre section (or the equivalent area); and
  - (4) The auxiliary rotor on helicopters.
- (c) Annual and 100-hour inspections.
  - i. Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection. The checklist may be of the person's own design, one provided by the manufacturer of the equipment being inspected, or one obtained from another source. This checklist shall include the scope and detail of the items prescribed by the Authority. See IS: 5.6.1.7 for components to be included in an annual or 100-hour inspection.
  - (2) Each person approving a piston-engined aircraft for return to service after an annual or 100-hour inspection shall, before that approval, run the aircraft engine or engines to determine satisfactory performance in accordance with the current manufacturer's recommendations of:-
    - (i) Power output (static and idle rpm);
    - (ii) Magnetos;
    - (iii) Fuel and oil pressure; and
    - (iv) Cylinder and oil temperature.
  - (3) Each person approving a turbine-engined aircraft for return to service after an annual or 100- hour inspection shall, before that approval, run the aircraft engine or engines to determine satisfactory performance in accordance with the current manufacturer's recommendations.
- (d) Progressive inspections.
  - (1) Each person performing a progressive inspection shall, at the start of a progressive inspection, inspect the aircraft completely. After this initial inspection, routine and detailed inspections must be conducted as prescribed in the progressive inspection schedule. Routine inspections consist of visual examination or check of the appliances the aircraft and its components and systems, insofar as practicable without disassembly. Detailed inspections consist of a thorough examination of the appliances, the aircraft, and its components and systems, with such disassembly as is necessary. For the purposes of this subparagraph, the overhaul of a component or system is considered to be a detailed inspection.
  - (2) If the aircraft is away from the station where inspections are normally conducted, an appropriately



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rated AMT, an AMO or the manufacturer of the aircraft may perform inspections in accordance with the procedures and using the forms of the person who would otherwise perform the inspection.

- (e) Continuous airworthiness maintenance program inspections.
  - (1) Each person performing the inspection program required for an AOC holder's aircraft or aircraft maintained under a continuous airworthiness maintenance program, shall perform the inspection in accordance with the instructions and procedures set forth in the inspection program.

### 5.6.1.8 PERFORMANCE RULES: AIRWORTHINESS LIMITATIONS

- (a) Each person performing an inspection or other maintenance specified in an airworthiness limitations section of a current manufacturer's maintenance manual, or Instructions for Continued Airworthiness, shall perform the inspection or other maintenance in accordance with that section, or in accordance with specifications approved by the Authority.

### 5.6.1.9 DISPOSITION OF LIFE-LIMITED AIRCRAFT PARTS.

- (a) For the purposes of this section:

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.

- (b) 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.
- (c) Disposition of parts removed from type-certificated products. Except as provided in paragraph (b) of this section, after April 15, 2002 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

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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 5.6.1.8 of this Part 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 5.6.1.8 of this Part 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 ECAA.
- (d) 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.

### 5.7 MAINTENANCE AND INSPECTION RECORDS AND ENTRIES

#### 5.7.1.1 CONTENT, FORM, AND DISPOSITION OF RECORDS FOR MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING, AND ALTERATION OF AIRCRAFT AND LIFE LIMITED PARTS

- (a) Each person who maintains, performs preventive maintenance, rebuilds, or alters an aircraft or life limited parts shall, when the work is performed satisfactorily, make an entry in the maintenance record of that equipment as follows:-
  - (1) A description (or reference to data acceptable to the Authority) of work performed, including-
    - (i) The total time in services (hours, calendar time and cycles, as appropriate) of the aircraft and all life-limited components;
    - (ii) The current status of compliance with all mandatory continuing airworthiness information;

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- (iii) Appropriate details of alterations and repairs;
  - (iv) Time in service (hours, calendar time and cycles, as appropriate) since last overhaul of the aircraft or its components subject to a mandatory overhaul life;
  - (v) The current status of the aircraft's compliance with the maintenance program; and the detailed maintenance records to show that all requirements for signing of a maintenance release have been met.
- (2) Completion date of the work performed; and
  - (3) Name, signature, certificate number, and kind of license held by the person approving the work.
- (b) In addition to the entry required by paragraph (a), major repairs and alterations shall be entered on a form, and the form disposed of, in the manner prescribed in IS: 5.7.1.1, by the person performing the work.

### 5.7.1.2 CONTENT, FORM AND DISPOSITION OF RECORDS FOR MAINTENANCE, PREVENTIVE MAINTENANCE, OVERHAUL AND REBUILDING OF A PRODUCT

- (a) No person shall approve for return to service any aeronautical product that has undergone maintenance, preventive maintenance, overhaul or rebuilding of a product unless:-
- (1) The appropriate maintenance record entry has been made;
  - (2) The repair or alteration form authorized by or furnished by the Authority has been executed in a manner prescribed by the Authority;
  - (3) If a repair or alteration results in any change in the aircraft operating limitations or flight data contained in the approved aircraft flight manual, those operating limitations or flight data are appropriately revised and set forth as prescribed.
- (b) Additional entries for overhaul and rebuilding.
- (1) No person shall describe in any required maintenance entry or form, an aeronautical product as being overhauled or rebuilt unless:-
    - (i) It has been disassembled, cleaned, inspected as permitted, repaired as necessary, and reassembled using methods, techniques, and practices acceptable to the Authority; and
    - (ii) It has been tested in accordance with approved standards and technical data, or in accordance with current standards and technical data acceptable to the Authority, which have been developed and documented by the holder of the type certificate, supplemental type certificate, or a material, part, process, or appliance manufacturing approval.
  - (2) No person shall describe in any required maintenance entry or form an aircraft or other aeronautical product as being rebuilt unless it has been disassembled, cleaned, inspected as permitted, repaired as necessary, reassembled, and tested to the same tolerances and limits as a new item, using either new parts or used parts that conform to new part tolerances and limits.
- (b) If the maintenance, preventive maintenance, overhaul or rebuilding of a product is performed by an

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- AMO, the AMO shall complete an airworthiness approval tag as prescribed in Part 6.
- (c) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless –
- (1) It has been approved for return to service by appropriately authorized person; and
  - (2) The maintenance record entry required by 5.7.1.1 has been made.
- (d) No person may carry any person (other than crewmembers) in an aircraft that has been maintained, rebuilt, or altered in a manner that may have appreciably changed its flight characteristics or substantially affected its operation in flight until an appropriately rated pilot flies the aircraft, makes an operational check of the maintenance performed or alteration made, and logs the flight in the aircraft records.
- (e) The aircraft does not have to be flown as required by paragraph (d) of this section if, prior to flight, ground tests, inspection, or both show conclusively that the maintenance, preventive maintenance, rebuilding, or alteration has not appreciably changed the flight characteristics or substantially affected the flight operation of the aircraft.

### 5.7.1.3 CONTENT, FORM, AND DISPOSITION OF RECORDS OF INSPECTIONS FOR RETURN TO SERVICE

- (a) Inspection record entries. The person approving or disapproving the return to service of an aeronautical product after any inspection performed in accordance with Part 8, shall make an entry in the maintenance record of that equipment containing the following information:-
- (1) Type of inspection and a brief description of the extent of the inspection;
  - (2) Date of the inspection and aircraft or component total time in service;
  - (3) Signature, the license number, and kind of license held by the person approving or disapproving for return to service the aeronautical product;
  - (4) If the aircraft or component is found to be airworthy and approved for return to service, the following or a similarly worded statement — ***“I certify that this aircraft/ component has been inspected in accordance with (insert type) inspection and was determined to be in airworthy condition”***;
  - (5) If the aircraft or component is not approved for return to service because of needed maintenance, non-compliance with the applicable specifications, airworthiness directives, or other approved data, the following or a similarly worded statement — I certify that this aircraft/component has been inspected in accordance with (insert type) inspection and a list of discrepancies and unairworthy items dated (date) has been provided for the aircraft owner or operator; and
  - (6) If an inspection is conducted under an inspection program provided for in Part 8, the person performing the inspection shall make an entry identifying the inspection program accomplished, and containing a statement that the inspection was performed in accordance with the inspections and procedures for that particular program.

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- (c) Listing of discrepancies. The person performing any inspection required in Part 8 who finds that the aircraft is not airworthy or does not meet the applicable type certificate data sheet, airworthiness directives or other approved data upon which its airworthiness depends, shall give the owner/operator a signed and dated list of those discrepancies.

### 5.7.1.4 MAINTENANCE RECORDS.

- (a) Each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

- (1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

- (i) A description (or reference to data acceptable to the Authority of the work performed; and
- (ii) The date of completion of the work performed; and
- (iii) The signature, and certificate number of the person approving the aircraft for return to service.

- (2) Records containing the following information:

- (i) The total time in service of the airframe, each engine, each propeller, and each rotor.
- (ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.
- (iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.
- (iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.
- (v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.
- (vi) Copies of the forms for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

- (b) The owner or operator shall retain the following records for the periods prescribed:

- (1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.
- (2) The records specified in paragraph (a) (2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

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- (3) A list of defects furnished to a registered owner or operator under shall be retained until the defects are repaired and the aircraft is approved for return to service.
- (c) The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Authority or any authorized representative of the Accident Investigation Bureau. In addition, the owner or operator shall present ECAA FORM AWS 012 described in paragraph (d) of this section for inspection upon request of any law enforcement officer.
- (d) When a fuel tank is installed within the passenger compartment or a baggage compartment pursuant to applicable requirements, a copy of ECAA Form AWS007 shall be kept on board the modified aircraft by the owner or operator.

### 5.7.1.5 ELECTRONIC AIRCRAFT MAINTENANCE RECORDS (EAMR) AND CONTINUING AIRWORTHINESS RECORDS

#### GENERAL

- (a) The information pertaining to aircraft maintenance and continuing airworthiness is often recorded, certified and stored in a paper format. The accepted paper-based practice capabilities are challenged and limited in supporting real time accurate and complete records when faced with the increase of information volume and complexity associated with modern aircraft operation and maintenance. Electronic record-keeping processes and procedures intended to be implemented by air operators and maintenance organizations shall first be approved by the Authority prior to being used.
- (b) An electronic record-keeping system shall be a system of record processing in which records are entered, electronically endorsed, stored, and retrieved electronically by a computer system rather than in the traditional "hard copy" or paper form. The documents, manuals and information may be available in a format other than on printed paper. In any case, availability, usability and reliability shall be assured.
- (c) Any electronic record-keeping system and the record it generates, processes and stores shall be described in the operator's Maintenance Control Manual, be acceptable to the ECAA and meet the requirements set forth for the operator's maintenance and operational activity. This shall include unrestricted ECAA access for auditing and the capability of the organization to provide paper copies of records if required by the ECAA.
- (d) The electronic record generated, processed and stored per the requirements shall be considered as original documents. Use of a complete electronic record-keeping system should be acceptable to the ECAA. Electronic records signed electronically should be considered equivalent to aircraft maintenance and continuing airworthiness records authenticated with non-electronic signatures. Any printout of an electronic record required by the ECAA shall have a watermark displayed on the page background stating "**PRINTED FROM ELECTRONIC FILE**".
- (e) The exchange of electronic records between aviation organizations, under the same or different authority oversight responsibility, should be accomplished on a voluntary basis where both the issuer and receiver agree on the electronic transfer of the records.
- (f) Paper-based aircraft maintenance records should continue to be acceptable to the ECAA if the air operator or maintenance organization adopts the traditional paper-based system. Notwithstanding the capability stipulated in paragraph (c) above, the ECAA may not require that a dual system be implemented if the organization adopted an electronic record system in agreement with provision

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paragraph (d). A combination of electronic and paper-based maintenance record-keeping system should be acceptable to the ECAA if the air operator or maintenance organization adopts the traditional paper-based system as a backup system in case of situations where a full electronic record cannot be created.

- (g) The adoption of the electronic records system shall be conditional to providing to all system users the adequate training that includes security awareness and policy and procedures relevant to the system adopted. The assurance of its implementation is, thus, as important to an electronic records system as the architecture itself. A certificate holder shall not implement electronic record system before ECAA validates acceptance of the electronic records system, the technical capabilities of the proposed system, and the organizational readiness to adopt the system.

### 1) IDENTIFICATION, AUTHENTICATION AND AUTHORIZATION

- (a) The basis of any electronic record and its related electronic signature identity management system is trust. Whether it is about identifying an aircraft, a crew member, a mechanic, a component, or a ground station entity, the organization will have to be able to trust that, when the entity presents a digital credential, the respective credential was issued to and is linked with that entity. To facilitate the establishment of this trust, requirements and procedures shall be specified enabling and ensuring verification of the identity of the various parties that are involved in the issuance of a credential. The credential shall be the basis of establishing the identity of an electronic record system user.
- (b) The electronic record system shall perform the user's identity authentication. This shall consist of means by which the system validates an authorized user's identity. These means may include, but are not limited to, a password, a Personal Identification Number (PIN), a cryptographic key, or a badge swipe, all in correlation with the implemented solution and processes.
- (c) The level of identity assurance and authentication shall be commensurate to the class of activity for which the electronic record system is authorizing the user's access.
- (d) The user's identity assurance shall comprise both initial and continuing (i.e. periodic) procedures with which the user has to comply.
- (e) The organization to which the user belongs at the time of interacting with the electronic record shall be responsible for the correlation between the management of the user's identity and the user's scope of authorization.

### 2) ELECTRONIC SIGNATURE

*Note.* — The use of the wording “electronic signature” is intended here to capture broad and diverse categories of solutions which, although they may be differently identified in the expert field of digital security in accordance with their technological features and capabilities, are all in compliance with provisions (c), (d) and (e). The inaccuracy generated by non-differentiation between categories such as electronic signature, digital signature, advanced electronic signature, secure electronic signature or digital electronic signature is considered irrelevant for these provisions as long as compliance with (c), (d) and (e) is ensured by the solution adopted. The considerations presented in this section are entirely valid for aviation applications highlighted in other ECAA publications (e.g., Electronic Flight Bags (EFBs)).

- (a) The handwritten signature is universally accepted because it has certain qualities and attributes that should be preserved in any electronic signature. For an acceptable electronic signature, the purpose



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is identical to that of a handwritten signature; therefore an electronic signature should possess those qualities and attributes that guarantee a handwritten signature's authenticity.

- (b) Electronic record-keeping systems may be used to generate aircraft records (e.g. maintenance task cards, aircraft maintenance records, dispatch releases, flight releases, airworthiness releases, and flight test reports) for which there is a need to be able to properly authenticate the user with an electronic signature.
- (c) The electronic signature is the online equivalent of a handwritten signature. It is an electronic sound, symbol, visible mark or process attached to or logically associated with a record and executed or adopted by an individual with the intent to sign the record. It electronically identifies and authenticates an individual entering, verifying, or auditing computer-based records. The electronic signature should provide a secure authentication of the signatory and should be linked to the data for which the signature was created in such a way that any subsequent change of the data is detectable.
- (d) electronic signatures shall possess the following attributes:
  - (1) **Uniqueness** which is the feature by which the electronic signature shall identify a specific individual and only that individual, and should be difficult to duplicate. An acceptable method of proving the uniqueness of a signature is by using an identification and authentication procedure that validates the identity of the signatory. Acceptable means of identification and authentication include the use of separate and unrelated identification and authentication codes. These codes could be encoded onto badges, cards, cryptographic keys, or other objects. Systems using PIN or passwords could also be an acceptable method of ensuring uniqueness. A computer entry used as a signature should have restricted access that is limited by an authentication code that is changed periodically. Additionally, a system could use physical characteristics, such as a fingerprint, handprint, or voice pattern, as a method of identification and authorization.
  - (2) **Significance**, which is the feature by which an individual using an electronic signature shall take deliberate and recognizable action to affix his or her signature. Acceptable, deliberate actions for creating a digital electronic signature include: badge swipes, signing an electronic document with a stylus, typing specific keystrokes or using a digital signature.
  - (3) **Scope**, which is the feature by which the scope of information being affirmed with an electronic signature shall be clear to the signatory and to subsequent readers of the record, record entry, or document. The electronic record shall accurately reflect the information being affirmed by signatory and the signatory should be fully aware of what he or she is signing.
  - (4) **Security**, which is the feature by which an electronic system that produces signatures shall restrict other individuals from affixing another individual's signature to a record, record entry, document, or alter the content without trace. To this effect, a corresponding policy and management structure should support the computer hardware and software that delivers the information. The system shall contain restrictions and procedures to prohibit the use of an individual's electronic signature when the individual leaves or terminates employment. This should be done immediately upon notification of the change in employment status.
  - (5) **Non-repudiation**, which is the feature by which an electronic signature shall prevent a signatory from denying that he or she affixed a signature to a specific record, record entry, or document.
  - (6) **Traceability**, which is the feature by which an electronic signature shall provide positive traceability to the individual who signed a record, record entry, or any other document.



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- (e) The electronic signature solution adopted shall adhere to validated requirements and industry standards regarding:
  - (1) the strength of the user/system identification credential employed in creating signatures, the proof-of possession algorithm for identification credentials,
  - (2) the cryptographic algorithm for protection of data and alternatives that may provide similar protection if the previously enumerated are deemed impractical.
- (f) The electronic records are essentially linked in most cases to the date and time information regarding the moment in which they were created, modified and signed-off. Such information shall be appropriately addressed by the time stamping capability of the electronic record-keeping system.

### 3) SECURITY AND INTEGRITY

- (a) A corresponding policy and management structure shall support the computer hardware and software that delivers the information. Appropriate physical security and electronic record backup procedures shall be established for current, operational, stored and archived records.
- (b) The electronic record system should protect confidential information.
- (c) The electronic record system needs to ensure that the information is not altered by operating any unauthorized changes to the record.
- (d) A certificate holder shall establish procedures allowing it to correct documents that were electronically signed in error. The original entry should be superseded anytime a correction related to that entry is made. (The original entry should be voided but remain in place. Reference to a new entry shall be made and electronically signed and dated). It shall be clearly identified that the original entry has been superseded by another entry.
- (e) A certificate holder shall establish procedures to describe how the operator will ensure that the electronic records are transmitted in accordance with the appropriate regulatory requirements to stakeholders who need access to the records.
- (f) A certificate holder shall establish procedures for reviewing the computerized personal identification codes system to ensure that the system will not permit password duplication.
- (g) A certificate holder shall establish procedures for auditing the computer system periodically to ensure the integrity of the system. A record of the audit should be completed and retained on file as part of the operator's record retention requirements. This audit may be supported by system automatic self-testing.
- (h) A certificate holder shall establish procedures for non-recurring audits of the computer system if the integrity of the system is suspect.
- (i) A certificate holder shall establish audit procedures to ensure the integrity of each computerized workstation. If the workstations are server-based and contain no inherent attributes that enable or disable access, there is no need for each workstation to be audited. The procedures should be applicable to both fixed (e.g. desktop computers) and mobile equipment (e.g. laptops, tablets, PMATs etc.).
- (j) A certificate holder shall establish an information security assessment process for the electronic record system to determine how effectively each entity being assessed (e.g. host, network, procedure, person) meets specific security objectives. The effective implementation of such

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established process should employ password cracking and security penetration testing procedures.

### 4) ARCHIVING AND TRANSFERABILITY

- (a) In addition to physical safety of the archives, specific procedures for archiving electronically signed documents shall be established. A means of safely archiving electronically signed documents shall be part of any electronic signature computer software. This will provide for and adequately support the retention, access and future authentication of electronic records.
- (b) A certificate holder shall establish procedures to ensure that all maintenance and continuing airworthiness records are made available at aircraft transfer to support the Export C of A. The electronic record-keeping system shall include the necessary protocol to allow for secure transfer of the records to another electronic record-keeping system.

### 5.7.1.6 REBUILD ENGINE MAINTENANCE RECORDS.

- (a) The owner or operator may use a new maintenance record, without previous operating history, for an aircraft engine rebuilt by the manufacturer or by an organization approved by the manufacturer.
- (b) Each manufacturer or organization that grants zero time to an engine rebuilt by it shall enter in the new record—
  - (1) A signed statement of the date the engine was rebuilt;
  - (2) Each change made as required by airworthiness directives; and
  - (3) Each change made in compliance with manufacturer's service bulletins, if the entry is specifically requested in that bulletin.
- (c) For the purposes of this section, a rebuilt engine is a used engine that has been completely disassembled, inspected, repaired as necessary, reassembled, tested, and approved in the same manner and to the same tolerances and limits as a new engine with either new or used parts. However, all parts used in it must conform to the production drawing tolerances and limits for new parts or be of approved oversized or undersized dimensions for a new engine.

### 5.7.1.7 ALTIMETER SYSTEM AND ALTITUDE REPORTING EQUIPMENT TESTS AND INSPECTIONS.

- (a) No person may operate an airplane, or helicopter, in controlled airspace under IFR unless—
  - (1) Within the preceding 24 calendar months, each static pressure system, each altimeter instrument, and each automatic pressure altitude reporting system has been tested and inspected and found to comply with IS: 5.7.1.7 and IS: 5.7.1.8;
  - (2) Except for the use of system drain and alternate static pressure valves, following any opening and closing of the static pressure system, that system has been tested and inspected and found to comply with paragraph (a) of IS: 5.7.1.7; and
  - (3) Following installation or maintenance on the automatic pressure altitude reporting system of the ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c) of IS: 5.7.1.8.
- (b) The tests required by paragraph (a) of this section must be conducted by—

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- (1) The manufacturer of the airplane, or helicopter, on which the tests and inspections are to be performed;
  - (2) An Approved Maintenance Organization properly equipped to perform those functions and holding—
    - (i) An instrument rating, Class I;
    - (ii) A limited instrument rating appropriate to the make and model of appliance to be tested;
    - (iii) A limited rating appropriate to the test to be performed;
    - (iv) An airframe rating appropriate to the airplane, or helicopter, to be tested; or
  - (3) A certificated mechanic with an airframe rating (static pressure system tests and inspections only).
- (c) Altimeter and altitude reporting equipment approved under Technical Standard Orders are considered to be tested and inspected as of the date of their manufacture.
- (d) No person may operate an airplane, or helicopter, in controlled airspace under IFR at an altitude above the maximum altitude at which all altimeters and the automatic altitude reporting system of that airplane, or helicopter, have been tested.

### 5.7.1.8 ATC TRANSPONDER TESTS AND INSPECTIONS.

- (a) No persons may use an ATC transponder that is specified in ECARAS Part 7 unless, within the preceding 24 calendar months, the ATC transponder has been tested and inspected and found to comply with **IS: 5.7.1.8**; and
- (b) Following any installation or maintenance on an ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c) of **IS: 5.7.1.8**.
- (c) The tests and inspections specified in this section must be conducted by—
  - (1) An Approved Maintenance Organization properly equipped to perform those functions and holding—
    - (i) A radio rating, Class III;
    - (ii) A limited radio rating appropriate to the make and model transponder to be tested;
    - (iii) A limited rating appropriate to the test to be performed;
  - (2) A holder of a continuous airworthiness maintenance program as provided in Part 9; or
  - (3) The manufacturer of the aircraft on which the transponder to be tested is installed, if the transponder was installed by that manufacturer.

### 5.7.1.9 REQUIREMENT FOR COMPASS SWING

- (a) This subpart prescribes the requirements for Ethiopian registered aircraft in respect of direct reading compasses, gyro-stabilised remote indicating compass systems and non gyro-stabilized remote indicating compass systems.
- (b) For the purpose of this subpart:

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- (1) **Calibration** means the measurement of residual deviations of a compass installed in an aircraft;
  - (2) **Deviation** means the angle required to be added algebraically to the compass reading to obtain the aircraft magnetic heading; and
  - (3) **Standby Compass** means a direct reading compass which is not used as the primary heading reference.
- (c) The operator of Ethiopian registered aircraft shall conduct a compass swing to calibrate each installed compass in accordance with the conditions and time intervals prescribed in the maintenance schedule. In the event the maintenance schedule does not prescribe a time interval, a compass swing shall be conducted at least once every twelve months.
  - (d) The operator shall verify the accuracy of the compass when the accuracy of the compass is in doubt and shall carry out a compass swing when necessary.
  - (e) A compass swing shall be performed in accordance with approved data and documents, unless otherwise permitted by the Authority. The presence of magnetic interference shall also be taken into consideration during the compass swing.
  - (f) Deviation of the compass at any heading shall be within a limit stipulated by the aircraft manufacturer. In the absence of such limits specified by the aircraft manufacturer, the deviation shall be within a limit acceptable to the Authority.
  - (g) A record of the compass swing shall be made in the aircraft log book or in any other manner acceptable to the Authority.
  - (h) A compass deviation card shall be made available for the primary standby compass, and shall contain at least the following information:
    - (1) the magnetic heading and the compass reading necessary to achieve the magnetic heading at the cardinal and intermediate 30 degree headings;
    - (2) the date of the compass swing;
    - (3) the type and serial number of the compass; and
    - (4) the identity and signature of the person responsible for the compass swing.
  - (i) The compass deviation card shall be protected against water or other damage and be positioned so that it can be easily read during flight.

### 5.8 AIRCRAFT MASS SCHEDULE

This section prescribes the requirements for weighing Ethiopian registered aircraft including helicopters, the determination of the centre of gravity of such aircraft and preparation of Basic Weight Schedules and Weight and Balance Reports.

- (a) An aircraft in respect of which a standard certificate of airworthiness is issued under these Rules and standards shall be weighed, and the position of the aircraft's centre of gravity determined, at such periodicity and in such manner as the Authority may require or approve in the case of that aircraft.
- (b) Upon the aircraft being weighed, the owner or operator of the aircraft shall prepare a mass schedule showing-
  - (1) The basic mass of the aircraft, namely the mass of the empty aircraft together with the mass of unusable fuel and unusable oil in the aircraft and of such items of equipment as are indicated in

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the mass schedule, or such other mass as may be approved by the Authority in the case of that aircraft; and

- (2) The position of the centre of gravity of the aircraft when the aircraft contains only the items included in the basic mass or such other position of the centre of gravity as may be approved by the Authority in the case of that aircraft.
- (c) The mass schedule shall be preserved by the operator of the aircraft until the expiration of a period of six months following the next occasion on which the aircraft is weighed for the purpose of this Rules and Standards.

When an aircraft is weighed, the condition of the aircraft (i.e. the equipment, the position of movable items and other items of load such as fluids in tanks) shall be recorded. The equipment installed at the time of weighing should not differ from that in the declared Basic Equipment list associated with the Basic Weight Schedule. Otherwise, in determining the Basic Weight and the corresponding centre of gravity position, corrections will have to be made for items that have been weighed but that are not Basic Equipment items, and for Basic Equipment items not installed in the aircraft during the weighing.

Weighing results and related calculations shall be recorded in a weighing report which shall be retained by the operator. When the aircraft is again weighed the previous weighing records must be retained with the aircraft records. The operator shall maintain records of all known weight and centre of gravity changes which occur after the aircraft has been weighed and such records shall be retained by the operator.

The following changes in basic weight or centre of gravity position are considered significant and must be reported to the ECAA:

- (1) Aeroplanes whose empty weight has changed by more than 0.5% of the maximum total weight authorized or whose basic centre of gravity position has changed by more than 0.5 % of the mean aerodynamic chord.
- (2) Helicopters whose empty weight has changed by more than 1% of the maximum total weight authorized or whose basic centre of gravity position has changed by more than 0.5 inch or 10% of the maximum permissible centre of gravity range whichever is the lesser.

A Weight and Balance Report shall be produced for each Ethiopian registered aircraft. A copy of each report shall be supplied to ECAA. The Weight and Balance Report is intended to record the essential loading data to enable the particular aircraft to be correctly loaded and to include sufficient information for an operator to produce written loading instructions in accordance with the requirements in ECARAS Part – 8.

The Weight and Balance Report shall include the following items:

- (1) Reference number and date of issue.
- (2) Type and model number of the aircraft and its nationality and registration mark.
- (3) Basic Weight. The Basic Weight and centre of gravity of the aircraft as derived from the Basic Weight Schedule shall be presented. A copy of the Basic Weight Schedule, including

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the Basic Equipment list, and any referenced weighing report, shall be attached to the Report.

- (4) Datum definition. A diagram or a description of the datum (e.g. in relation to the fuselage frame numbering system or other identifiable points) shall be included.
  - (5) Variable Load. Information on the weight and lever arms appropriate to Variable Load items may be detailed for as many roles as the operator wishes and for every role the total weight and moment change shall be given.
  - (6) Loading Information. This shall include all relevant information so that, knowing the disposable load which is intended to be carried, the weight and the position of the centre of gravity of the aircraft can be calculated. At least the following shall be given:
    - (i) The lever arm of the centre of gravity of an occupant of each seat.
    - (ii) The lever arm of each compartment or area in the aircraft where disposable load, such as luggage or freight, may be placed.
    - (iii) Any significant change in the centre of gravity of the aircraft (change in moment) which will result from a change in configuration, such as the retraction and extension of the landing gear.
    - (iv) The lever arm of the centre of gravity of fuel and oil in each tank including the variation of the lever arm with the quantity loaded if this variation is significant.
    - (v) The maximum total usable capacities of the fuel and oil tanks and the weight of fuel and oil when the tanks are filled to their capacities assuming typical densities of these fluids.
  - (7) A statement shall be given in the Schedule to the effect that the pilot-in-command shall satisfy himself before take-off that the load is of such weight, and is so distributed and secured that it may safely be carried on the intended flight.
  - (8) A statement that the Report supersedes all earlier issues.
- (i) Requirements of periodic mass and balance reports for all aircrafts are as indicated in paragraphs (d) (1) and (d) (2) below.
- (1) Each aircraft in the category of light aircraft shall be re-weighed and a current empty weight and empty weight center of gravity established when: -
    - (i) The aircraft is overhauled;
    - (ii) Additional equipment is installed or previously installed equipment is removed;
    - (iii) The mass of the aircraft is known to have changed for any other reason;
    - (iv) The time since the last weighing is due by 36 calendar months.
  - (2) An operator shall ensure that a current empty weight and empty weight center of gravity is established for each aircraft (large aircraft) it operates when: -
    - (i) The aircraft is overhauled;
    - (ii) Additional equipment is installed or previously installed equipment is removed;
    - (iii) The weight of the aircraft is known to have changed for any other reason;
    - (iv) The time since the last weighing is due by 60 calendar months.

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### 5.9 AIRWORTHINESS APPROVAL FOR EXPORT

- (a) Ethiopian Civil Aviation Authority facilitates the transfer of aircraft onto the register of another State by the issue of an Export Certificate of Airworthiness.
- (b) While not valid for the purpose of flight Export Certificate of Airworthiness issued by Ethiopian Civil Aviation Authority provides confirmation of a recent satisfactory review of the airworthiness status of the aircraft.
- (c) In establishing procedures for facilitating the export of aircraft Ethiopian Civil Aviation Authority has adopted "Export Certificate of Airworthiness" for the export document. Such certifications is intended to achieve the goal which is a statement by the exporting State confirming to the importing State the acceptable airworthiness status of the aircraft.
- (d) In the case of a complete aircraft the Export Certificate of Airworthiness confirms the aircraft's conformity with the approved design data and its acceptable airworthiness status and that the aircraft standard complies with the requirements of the importing State.

#### 5.9.1.1 EXPORT CERTIFICATE OF AIRWORTHINESS STATUS

- (a) It shall be known that an export certificate of airworthiness is not a Certificate of Airworthiness as defined by Article 31 of the Convention and therefore does not confer the right of international flight unless otherwise rendered valid by the importing State.
- (b) To be eligible for international flight, an aircraft having an Export Certificate of Airworthiness will require a valid Certificate of Airworthiness issued by the State of Registry or some equivalent document mutually acceptable to the exporting and importing States and accepted by any State(s) over which the aircraft will fly on its delivery flight.

#### 5.9.1.2 EXPORT CERTIFICATE OF AIRWORTHINESS EXCEPTIONS

If the importing State has any specific certification requirements and the export certificate of airworthiness is issued on the basis of a written statement for accepting exceptions by the importing state, the requirements that are not met, if any, must be listed on the export certificate of airworthiness as exceptions.

#### 5.9.1.3 ISSUANCE OF EXPORT CERTIFICATE OF AIRWORTHINESS

- (a) The authority will issue export certificate of airworthiness if the applicant shows that the aircraft conforms to its type certificate and any special requirements of the importing State, except as provided in sub-paragraph (b) of this paragraph.
- (b) An aircraft need not meet a requirement specified in sub paragraph (a) of this paragraph as applicable, if acceptable to the importing State and the importing State indicates that acceptability in writing.

### 5.10 CONTINUING AIRWORTHINESS MANAGEMENT ORGANIZATION

#### 5.10.1.1 SCOPE.

This subpart establishes the requirements to be met by an organization to qualify for the issue or continuation of an approval for the management of aircraft continuing airworthiness.

#### 5.10.1.2 APPLICABILITY.



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An application for issue or variation of a continuing airworthiness management organization approval shall be made on a form and in a manner established by the authority.

### 5.10.1.3 EXTENT OF APPROVAL.

- (a) The grant of approval is indicated by the issue of the certificate included in 5.11.1.3 by the authority. The approved continuing airworthiness management exposition must specify the scope of work deemed to constitute approval.
- (b) Notwithstanding paragraph (a), for commercial air transport, the approval shall be part of the air operator certificate issued by authority, for the aircraft operated.

### 5.10.1.4 CONTINUING AIRWORTHINESS MANAGEMENT EXPOSITION.

- (a) The continuing airworthiness management organization shall provide a continuing airworthiness management exposition containing the following information:
  - 1) A statement signed by the accountable manager to confirm that the organization will work in accordance with this part and the exposition at all times,
  - 2) The organization's scope of work,
  - 3) The title(s) and name(s) of person(s) referred to in 5.11.1.6(b) &(c),
  - 4) An organization chart showing associated chains of responsibility between the person(s) referred to in 5.11.1.6(b) and (c).
  - 5) A list of 5.11.1.7 airworthiness review staff,
  - 6) A general description and location of the facilities,
  - 7) Procedures specifying how the continuing airworthiness management organization ensures compliance with this part,
  - 8) The continuing airworthiness management exposition amendment procedures, and;
  - 9) The list of aircraft type and approved maintenance programme reference.
- (b) The continuing airworthiness management exposition and its amendments shall be approved by the authority. Notwithstanding paragraph
- (c) minor amendments to the exposition may be approved through an exposition procedure (hereinafter called indirect approval).

**5.10.1.5 FACILITIES.** The continuing airworthiness management organization shall provide suitable office accommodation at appropriate locations for the personnel specified in 5.11.1.6 of this subpart.

### 5.10.1.6 PERSONNEL REQUIREMENTS.

- (a) The organization shall appoint an accountable manager, who has corporate authority for ensuring that all continuing airworthiness management activities can be financed and carried out in accordance with this part.
- (b) For commercial air transport the accountable manager shall be the person who also has corporate authority for ensuring that all the operations of the operator can be financed and carried out to the standard required for the issue of an air operator's certificate.



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- (c) A person or group of persons shall be nominated with the responsibility of ensuring that the organization is always in compliance with this subpart. Such person(s) shall be ultimately responsible to the accountable manager.
- (d) For commercial air transport, the accountable manager shall designate a nominated post holder. This person shall be responsible for the management and supervision of continuing airworthiness activities, pursuant to paragraph (c).
- (e) The nominated post holder referred to in paragraph (d) shall not be employed by an ECAA approved maintenance organization under contract to the operator, unless specifically agreed by the authority.
- (f) The organization shall have sufficient appropriately qualified staff for the expected work.
- (g) All paragraph (c) and (d) persons shall be able to show relevant knowledge, background and appropriate experience related to aircraft continuing airworthiness.
- (h) The qualification of all personnel involved in continuing airworthiness management shall be recorded.

### 5.10.1.7 CERTIFICATE OF MAINTENANCE REVIEW STAFF.

- (a) To be approved to carry out certificate of maintenance reviews every six (6) months, an approved continuing airworthiness management organization shall have appropriate maintenance review staff to issue a certificate of maintenance review or recommendations. In addition to part 5.10.1.6 requirements, these staff shall have acquired:
  - (1) At least five years' experience in continuing airworthiness, and;
  - (2) an appropriate aircraft maintenance technician license or an aeronautical degree or equivalent,
  - (3) Formal aeronautical maintenance training,
  - (4) A position within the approved organization with appropriate responsibilities.
- (b) Maintenance review staff nominated by the approved continuing airworthiness organization can only be issued an authorization by the approved continuing airworthiness management organization when formally accepted by the authority after satisfactory completion of a maintenance review under supervision.
- (c) The organization shall ensure that maintenance review staff can demonstrate appropriate recent continuing airworthiness management experience.
- (d) Maintenance review staff shall be identified by listing each person in the continuing airworthiness management exposition together with their maintenance review authorization reference.
- (e) The organization shall maintain a record of all maintenance review staff, which shall include details of any appropriate qualification held together with a summary of relevant continuing airworthiness management experience and training and a copy of the authorization. This record shall be retained until two years after the maintenance review staff have left the organization.

### 5.10.1.8 CONTINUING AIRWORTHINESS MANAGEMENT.

- (a) All continuing airworthiness management shall be carried out according to 5.5 of this Rules and Standards.

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- (b) For every aircraft managed, the approved continuing airworthiness management organization shall:
- 1) Develop and control a maintenance programme for the aircraft managed including any applicable reliability programme,
  - 2) Present the aircraft maintenance programme and its amendments to the authority for approval and
  - 3) Provide a copy of the programme to the owner of non-commercially operated aircraft,
  - 4) Manage the approval of modification and repairs,
  - 5) Ensure that all maintenance is carried out in accordance with the approved maintenance programme and released in accordance with 6.5.1.7 of these regulations;
  - 6) Ensure that all applicable airworthiness directives and operational directives with a continuing airworthiness impact are applied,
  - 7) Ensure that all defects discovered during scheduled maintenance or reported are corrected by an ECAA approved maintenance organization;
  - 8) Ensure that the aircraft is taken to an ECAA approved maintenance organization whenever necessary;
  - 9) Coordinate scheduled maintenance, the application of airworthiness directives, the replacement of service life limited parts, and component inspection to ensure the work is carried out properly,
  - 10) Manage and archive all continuing airworthiness records and/or operator's technical log;
  - 11) Ensure that the mass and balance statement reflects the current status of the aircraft.
- (c) In the case of commercial air transport, when the operator is not an approved AMO, the operator shall establish a written maintenance contract between the operator and an ECAA approved maintenance organization or another operator, detailing the functions specified under Part 9.3.2.5, ensuring that all maintenance is ultimately carried out by an ECAA approved maintenance organization and defining the support of the quality functions of 5.10.1.12(b).
- (d) The aircraft base, scheduled line maintenance and engine maintenance contracts, together with all amendments, shall be approved by the authority. However, in the case of:
- 1) an aircraft requiring unscheduled line maintenance, the contract may be in the form of individual work orders addressed to the ECAA approved maintenance organization.
  - 2) Component maintenance, including engine maintenance, the contract as referred to in paragraph (c) may be in the form of individual work orders addressed to the ECAA approved maintenance organization.

### 5.10.1.9 DOCUMENTATION.

The approved continuing airworthiness management organization shall hold and use applicable current airworthiness data in the performance of continuing airworthiness tasks.

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### 5.10.1.10 MAINTENANCE REVIEW.

- (a) To satisfy the requirement for a maintenance review of an aircraft, a full documented review of the aircraft records shall be carried out by the approved continuing airworthiness management organization in order to be satisfied that:
- 1) Airframe, engine and propeller flying hours and associated flight cycles have been properly recorded,
  - 2) The flight manual is applicable to the aircraft configuration and reflects the latest revision status,
  - 3) All the maintenance due on the aircraft according to the approved maintenance programme has been carried out,
  - 4) All known defects have been corrected or, when applicable, carried forward in a controlled manner, All applicable airworthiness directives and mandatory bulletins have been applied and properly registered, and;
  - 5) All modifications and repairs applied to the aircraft have been registered and are approved according to Part 5.7.1.2,
  - 6) All service life limited components installed on the aircraft are properly identified, registered and have not exceeded their approved service life limit,
  - 7) All maintenance has been released in accordance with Part 6.5.1.7,
  - 8) The current mass and balance statement reflects the configuration of the aircraft and is valid,
  - 9) The aircraft complies with the latest revision of its type design approved by the state of design,
  - 10) If required, the aircraft holds a noise certificate corresponding to the current configuration of the aircraft in compliance with part 16 of these regulations.
- (b) The approved continuing airworthiness management organization's maintenance review staff shall carry out a physical survey of the aircraft. For this survey, maintenance review staff not appropriately qualified to part 2 of these regulations shall be assisted by such qualified personnel.
- (c) Through the physical survey of the aircraft, the maintenance review staff shall ensure that:
- 1) All required markings and placards are properly installed,
  - 2) The aircraft complies with its approved flight manual,
  - 3) The aircraft configuration complies with the approved documentation,
  - 4) No evident defect can be found that has not been addressed, and;
  - 5) No inconsistencies can be found between the aircraft and the paragraph (a) documented review of records.
- (d) A certificate of maintenance review or a recommendation is issued by maintenance review staff appropriately authorized in accordance with subpart 5.10.1.7 on behalf of the approved continuing airworthiness management organization when satisfied that the maintenance review has been properly carried out.

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- (e) A copy of the certificate of maintenance review shall be issued for an aircraft every six months and submitted to the authority within five (5) days.
- (f) Maintenance review tasks shall not be sub-contracted.
- (g) Should the outcome of the maintenance review be inconclusive, the authority shall be informed.

### 5.10.1.11 PRIVILEGES OF THE ORGANIZATION.

- (a) An approved continuing airworthiness management organization, may:
  - (1) Manage the continuing airworthiness of non-commercial air transport aircraft as listed on the approval certificate.
  - (2) Manage the continuing airworthiness of commercial and noncommercial air transport aircraft when listed on its air operator certificate.
  - (3) Arrange to carry out any task of continuing airworthiness within the limitation of its approval with another organization that is working under its quality system.
- (b) An approved continuing airworthiness management organization may additionally be approved to:
  - (1) Issue a certificate of maintenance review, or;
  - (2) Make a recommendation for the renewal of certificate of airworthiness
  - ((3) to issue recommendation to the authority for special flight permit to fly after maintenance check.

### 5.10.1.12 QUALITY SYSTEM.

- (a) To ensure that the approved continuing airworthiness management organization continues to meet the requirements of this subsection, it shall establish a quality system and designate a quality manager to monitor compliance with, and the adequacy of, procedures required to ensure airworthy aircraft. Compliance monitoring shall include a feedback system to the accountable manager to ensure corrective action as necessary.
- (b) The quality system shall monitor CAMO activities. It shall at least include the following functions:
  - (i) Monitoring that all CAMO activities are being performed in accordance with the approved procedures,
  - (ii) Monitoring that all contracted maintenance is carried out in accordance with the contract, and;
  - (iii) Monitoring the continued compliance with the requirements of this part.
- (c) The records of these activities shall be stored for at least two years.
- (d) Where the approved continuing airworthiness management organization is approved in accordance with another part, the quality system may be combined with that required by the other part.

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- (e) In case of commercial air transport the CAMO quality system shall be an integrated part of the operator's quality system.
- (f) In the case of a small CAMO that does not have the privileges granted under 5.10.1.11(b) of these regulations, the quality system can be replaced by performing organizational reviews on a regular basis.

### 5.10.1.13 CHANGES TO THE APPROVED CONTINUING AIRWORTHINESS ORGANIZATION.

- (a) In order to enable the authority to determine continued compliance with this part, the approved continuing airworthiness management organization shall notify it of any proposal to carry out any of the following changes, before such changes take place:
  - (i) the name of the organization.
  - (ii) the location of the organization.
  - (iii) additional locations of the organization.
  - (iv) the accountable manager.
  - (v). any of the persons specified in 5.10.1.6(c).
  - (vi) the facilities, procedures, work scope and staff that could affect the approval.
- (b) In the case of proposed changes in personnel not known to the management beforehand, these changes shall be notified at the earliest opportunity but not exceeding ten (10) days.

### 5.10.1.14 RECORDKEEPING.

- (a) The continuing airworthiness management organization shall record all details of work carried out. The records required by Rules and Standards Part 8.3.1.9 and Part 9.3.2.8.
- (b) If the continuing airworthiness management organization has the privilege of 5.10.11(b), it shall retain a copy of each certificate of maintenance review and recommendation issued, together with all supporting documents.
- (c) The continuing airworthiness management organization shall retain a copy of all records listed in paragraph (b) until two years after the aircraft has been permanently withdrawn from service.
- (d) The records shall be stored in a manner that ensures protection from damage, alteration and theft.
- (e) All computer hardware used to ensure backup shall be stored in a different location from that containing the working data in an environment that ensures they remain in good condition.
- (f) Where continuing airworthiness management of an aircraft is transferred to another organization or person, all retained records shall be transferred to the said organization or person. The time periods prescribed for the retention of records shall continue to apply to the said organization or person.
- (g) Where a continuing airworthiness management organization terminates its operation, all retained records shall be transferred to the owner of the aircraft.

### 5.10.1.15 CONTINUED VALIDITY OF APPROVAL.

- (a) An approval shall be issued for two years duration. It shall remain valid subject to:

- (i) the organization remaining in compliance with this subsection.
  - (ii) the authority being granted access to the organization to determine continued compliance with this part, and;
  - (iii) the approval not being surrendered or revoked.
- (b) Upon surrender or revocation, the approval certificate shall be returned to the authority.

# IMPLEMENTING STANDARDS

### IS: 5.1.1.2 Major Alterations, Major Repairs, and Preventive Maintenance

#### (A)(8) MAJOR ALTERATIONS

- (a) **Airframe Major Alterations:** Alterations of the following parts and alterations of the following types, when not listed in the applicable aircraft specifications, are airframe major alterations:-
- (1) Wings.
  - (2) Tail surfaces.
  - (3) Fuselage.
  - (4) Engine mounts.
  - (5) Control system.
  - (6) Landing gear.
  - (7) Hull or floats.
  - (8) Elements of an airframe including spars, ribs, fittings, shock absorbers, bracing, cowlings, fairings, and balance weights.
  - (9) Hydraulic and electrical actuating system of components.

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- (10) Rotor blades.
  - (11) Changes to the empty weight or empty balance which result in an increase in the maximum Certified weight or centre of gravity limits of the aircraft.
  - (12) Changes to the basic design of the fuel, oil, cooling, heating, cabin pressurisation, electrical, hydraulic, de-icing, or exhaust systems.
  - (13) Changes to the wing or to fixed or movable control surfaces which affect flutter and vibration characteristics.
- (b) **Powerplant Major Alterations:** Major powerplant alterations, even when not listed in the applicable engine specifications, include:-
- (1) 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.
  - (2) Changes to the engine by replacing aircraft engine structural parts with parts not supplied by the original manufacturer or parts not specifically approved by the Authority.
  - (3) Installation of an accessory which is not approved for the engine.
  - (4) Removal of accessories that are listed as required equipment on the aircraft or engine specification.
  - (5) Installation of structural parts other than the type of parts approved for the installation.
  - (6) Conversions of any sort for the purpose of using fuel of a rating or grade other than that listed in the engine specifications.
- (c) **Propeller Major Alterations:** Major propeller alterations, when not authorized in the applicable propeller specifications, include:-
- (1) Changes in blade design.
  - (2) Changes in hub design.
  - (3) Changes in the governor or control design.
  - (4) Installation of a propeller governor or feathering system.
  - (5) Installation of propeller de-icing system.
  - (6) Installation of parts not approved for the propeller.
- (d) **Appliance Major Alterations:** Alterations of the basic design not made in accordance with recommendations of the appliance manufacturer or in accordance with applicable Airworthiness Directives are appliance major alterations. In addition, changes in the basic design of radio communication and navigation equipment approved under type certification or other authorization that have an effect on frequency stability, noise level, sensitivity, selectivity, distortion, spurious radiation, automated volume control (AVC) characteristics, or ability to meet environmental test conditions and other changes that have an effect on the performance of the equipment are also



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major alterations.

### IS: 5.1.1.2 (A)(9) MAJOR REPAIRS (DEFINITION)

- (a) **Airframe Major Repairs:** Repairs to the following parts of an airframe and repairs of the following types, involving the strengthening, reinforcing, splicing, and manufacturing of primary structural members or their replacement, when replacement is by fabrication such as riveting or welding, are airframe major repairs.
- (1) Box beams.
  - (2) Monocoque or semi monocoque wings or control surfaces
  - (3) Wing stringers or chord members
  - (4) Spars.
  - (5) Spar flanges.
  - (6) Members of truss-type beams.
  - (7) Thin sheet webs of beams.
  - (8) Keel and chine members of boat hulls or floats.
  - (9) Corrugated sheet compression members which act as flange material of wings or tail surfaces.
  - (10) Wing main ribs and compression members.
  - (11) Wing or tail surface brace struts.
  - (12) Engine mounts.
  - (13) Fuselage longerons.
  - (14) Members of the side truss, horizontal truss, or bulkheads.
  - (15) Main seat support braces and brackets.
  - (16) Landing gear brace struts.
  - (17) Axles.
  - (18) Wheels.
  - (19) Parts of the control system such as control columns, pedals, shafts, brackets, or horns.
  - (20) Repairs involving the substitution of material.
  - (21) The repair of damaged areas in metal or plywood stressed covering exceeding six inches in any direction.
  - (22) The repair of portions of skin sheets by making additional seams.
  - (23) The splicing of skin sheets.
  - (24) The repair of three or more adjacent wing or control surface ribs or the leading edge of wings and control surfaces, between such adjacent ribs.
  - (25) Repair of fabric covering involving an area greater than that required to repair two adjacent ribs.

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- (26) Replacement of fabric on fabric covered parts such as wings, fuselages, stabilizers, and control surfaces.
  - (27) Repairing, including rebottoming, of removable or integral fuel tanks and oil tanks.
- (b) **Powerplant Major Repairs:** Repairs of the following parts of an engine and repairs of the following types, are powerplant major repairs:-
- (1) Separation or disassembly of a crankcase or crankshaft of a piston engine equipped with an integral supercharger.
  - (2) Separation or disassembly of a crankcase or crankshaft of a piston engine equipped with other than spur-type propeller reduction gearing.
  - (3) Special repairs to structural engine parts by welding, plating, metalising, or other methods.
- (c) **Propeller Major Repairs:** Repairs of the following types to a propeller are propeller major repairs—
- (1) Any repairs to or straightening of steel blades.
  - (2) Repairing or machining of steel hubs.
  - (3) Shortening of blades.
  - (4) Retipping of wood propellers.
  - (5) Replacement of outer laminations on fixed pitch wood propellers.
  - (6) Repairing elongated bolt holes in the hub of fixed pitch wood propellers.
  - (7) Inlay work on wood blades.
  - (8) Repairs to composition blades.
  - (9) Replacement of tip fabric.
  - (10) Replacement of plastic covering.
  - (11) Repair of propeller governors.
  - (12) Overhaul of controllable pitch propellers.
  - (13) Repairs to deep dents, cuts, scars, nicks, etc., and straightening of aluminium blades.
  - (14) The repair or replacement of internal elements of blades.
- (d) **Appliance Major Repairs:** Repairs of the following types to appliances are appliance major repairs—
- (1) Calibration and repair of instruments.
  - (2) Calibration of radio equipment.
  - (3) Rewinding the field coil of an electrical accessory.
  - (4) Complete disassembly of complex hydraulic power valves.
  - (5) Overhaul of pressure type carburetors, and pressure type fuel, oil, and hydraulic pumps.

### IS: 5.1.1.2 (A)(11) PREVENTIVE MAINTENANCE (DEFINITION)

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- (a) **Preventive Maintenance:** Preventive maintenance is limited to the following work, provided it does not involve complex assembly operations.
- (1) Removal, installation and repair of landing gear tires.
  - (2) Replacing elastic shock absorber cords on landing gear.
  - (3) Servicing landing gear shock struts by adding oil, air, or both.
  - (4) Servicing landing gear wheel bearings, such as cleaning and greasing.
  - (5) Replacing defective safety wiring or cotter pins.
  - (6) Lubrication not requiring disassembly other than removal of non-structural items such as cover plates, cowlings, and fairings.
  - (7) Making simple fabric patches not requiring rib stitching or the removal of structural parts or control surfaces.
  - (8) Replenishing hydraulic fluid in the hydraulic reservoir.
  - (9) Refinishing decorative coating of fuselage, wings, tail group surfaces (excluding balanced control surfaces), fairings, cowlings, landing gear, cabin, or cockpit interior when removal or disassembly of any primary structure or operating system is not required.
  - (10) Applying preservative or protective material to components where no disassembly of any primary structure or operating system is involved and where such coating is not prohibited or is not contrary to good practices.
  - (11) Repairing upholstery and decorative furnishings of the cabin or cockpit when the repairing does not require disassembly of any primary structure or operating system or interfere with an operating system or affect primary structure of the aircraft.
  - (12) Making small simple repairs to fairings, non-structural cover plates, cowlings, and small patches and reinforcements not changing the contour so as to interfere with proper airflow.
  - (13) Replacing side windows where that work does not interfere with the structure of any operating system such as controls, electrical equipment, etc.
  - (14) Replacing safety belts.
  - (15) Replacing seats or seat parts with replacement parts approved for the aircraft, not involving disassembly of any primary structure or operating system.
  - (16) Troubleshooting and repairing broken circuits in landing light wiring circuits.
  - (17) Replacing bulbs, reflectors, and lenses of position and landing lights.
  - (18) Replacing wheels and skis where no weight and balance computation is involved.
  - (19) Replacing any cowling not requiring removal of the propeller or disconnection of flight controls.

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- (20) Replacing or cleaning spark plugs and setting of spark plug gap clearance.
- (21) Replacing any hose connection except hydraulic connections.
- (22) Replacing prefabricated fuel lines.
- (23) Cleaning fuel and oil strainers.
- (24) Replacing and servicing batteries.
- (25) Cleaning of balloon burner pilot and main nozzles in accordance with the balloon manufacturer's instructions.
- (26) Replacement or adjustment of non-structural fasteners incidental to operations.
- (27) The interchange of balloon baskets and burners on envelopes when the basket or burner is designated as interchangeable in the balloon type certificate data and the baskets and burners are specifically designed for quick removal and installation.
- (28) The installation of anti-misfueling devices to reduce the diameter of fuel tank filler openings provided the specific device has been made a part of the aircraft type certificate data by the aircraft manufacturer, the manufacturer has provided appropriately approved instructions acceptable to the Authority for the installation of the specific device, and installation does not involve the disassembly of the existing filler opening.
- (29) Removing, checking, and replacing magnetic chip detectors.
- (30) The inspection and maintenance tasks prescribed and specifically identified as preventive maintenance in a primary category aircraft type certificate or supplemental type certificate holders approved special inspection and preventive maintenance program when accomplished on a primary category aircraft provided:
  - (i) They are performed by the holder of at least a private pilot certificate issued under Part 2 who is the registered owner (including co-owners) of the affected aircraft and who holds a certificate of competency for the affected aircraft:
    - (a) issued by a school approved under Part 3; or
    - (b) issued by another entity that has a course approved by the Director General; and
  - (ii) The inspections and maintenance tasks are performed in accordance with instructions contained by the special inspection and preventive maintenance program approved as part of the aircraft's type design or supplemental type design.
- (31) Removing and replacing self-contained, front instrument panel-mounted navigation and communication devices that employ tray-mounted connectors that connect the unit when the unit is installed into the instrument panel, (excluding automatic flight control systems, transponders, and microwave frequency distance measuring equipment (DME)). The approved unit must be designed to be readily and repeatedly removed and replaced, and pertinent instructions must be provided. Prior to the unit's intended use, and operational check must be performed in accordance with the applicable sections of Part 8.

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### IS 5.2.1.2 TYPE CERTIFICATE ACCEPTANCE PROCEDURE

The Authority accepts the type certificates issued by the Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA), and Transport Canada (TC). Type certificates of other States of Design will be accepted if they are validated or accepted by FAA and/or EASA.

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### IS: 5.4.1.5 ISSUANCE OF A STANDARD CERTIFICATE OF AIRWORTHINESS

(d) The standard Certificate of Airworthiness issued by the Authority shall be as follows.

<b>FORM FSD/30</b>	 <b>ETHIOPIAN CIVIL AVIATION AUTHORITY</b> <b>CERTIFICATION OF AIRWORTHINESS</b>	No.....
1. Nationality & Registration Marks	2. Manufacturer and manufacturer's designation of aircraft	3. Aircraft Serial No.
4. Category:		
<p>5. This Certificate of Airworthiness is issued pursuant to the convention on International Civil Aviation dated 7 December 1944 and the Ethiopian Civil Aviation Rules and Standards Part 5 in respect of the above mentioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent operating limitations.</p> <p>Date of Issue _____ Signature _____  <span style="display: block; text-align: right;">For Ethiopian Civil Aviation Authority</span></p>		
<b>Renewal date</b>	<b>Valid Until</b>	<b>ECAA certification</b>
<b>Notations:</b>		

### IS: 5.6.1.7 PERFORMANCE RULES: INSPECTIONS

- (a) Each person performing an annual or 100-hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall thoroughly clean the aircraft and aircraft engine.
- (b) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the fuselage and hull group:

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- (1) Fabric and skin—for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.
  - (2) Systems and components—for improper installation, apparent defects, and unsatisfactory operation.
  - (3) Envelope, gas bags, ballast tanks, and related parts—for poor condition.
- (c) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the cabin and cockpit group:
- (1) Generally—for uncleanliness and loose equipment that might foul the controls.
  - (2) Seats and safety belts—for poor condition and apparent defects.
  - (3) Windows and windshields—for deterioration and breakage.
  - (4) Instruments—for poor condition, mounting, marking, and (where practicable) improper operation.
  - (5) Flight and engine controls—for improper installation and improper operation.
  - (6) Batteries—for improper installation and improper charge.
  - (7) All systems—for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.
- (d) Each person performing an annual or 100-hour inspection shall inspect (where applicable) components of the engine and nacelle group as follows:
- (1) Engine section—for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.
  - (2) Studs and nuts—for improper torquing and obvious defects.
  - (3) Internal engine—for cylinder compression and for metal particles or foreign matter on screens and sump drain plugs. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.
  - (4) Engine mount—for cracks, looseness of mounting, and looseness of engine to mount.
  - (5) Flexible vibration dampeners—for poor condition and deterioration.
  - (6) Engine controls—for defects, improper travel, and improper safetying.
  - (7) Lines, hoses, and clamps—for leaks, improper condition and looseness.
  - (8) Exhaust stacks—for cracks, defects, and improper attachment.
  - (9) Accessories—for apparent defects in security of mounting.

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- (10) All systems—for improper installation, poor general condition, defects, and insecure attachment.
- (11) Cowling—for cracks, and defects.
- (e) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the landing gear group:
  - (1) All units—for poor condition and insecurity of attachment.
  - (2) Shock absorbing devices—for improper oleo fluid level.
  - (3) Linkages, trusses, and members—for undue or excessive wear fatigue, and distortion.
  - (4) Retracting and locking mechanism—for improper operation.
  - (5) Hydraulic lines—for leakage.
  - (6) Electrical system—for chafing and improper operation of switches.
  - (7) Wheels—for cracks, defects, and condition of bearings.
  - (8) Tires—for wear and cuts.
  - (9) Brakes—for improper adjustment.
  - (10) Floats and skis—for insecure attachment and obvious or apparent defects.
- (f) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components of the wing and center section assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, and insecurity of attachment.
- (g) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components and systems that make up the complete empennage assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, insecure attachment, improper component installation, and improper component operation.
- (h) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the propeller group:
  - (1) Propeller assembly—for cracks, nicks, binds, and oil leakage.
  - (2) Bolts—for improper torquing and lack of safetying.
  - (3) Anti-icing devices—for improper operations and obvious defects.
  - (4) Control mechanisms—for improper operation, insecure mounting, and restricted travel.



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- (i) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the radio group:
  - (1) Radio and electronic equipment—for improper installation and insecure mounting.
  - (2) Wiring and conduits—for improper routing, insecure mounting, and obvious defects.
  - (3) Bonding and shielding—for improper installation and poor condition.
  - (4) Antenna including trailing antenna—for poor condition, insecure mounting, and improper operation.
- (j) Each person performing an annual or 100-hour inspection shall inspect (where applicable) each installed miscellaneous item that is not otherwise covered by this listing for improper installation and improper operation.

### **IS: 5.7.1.1 CONTENT, FORM AND DISPOSITION OF RECORDS FOR MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING AND ALTERATION OF AIRCRAFT AND LIFE LIMITED PARTS**

#### **IS: 5.7.1.1(B) RECORDING OF MAJOR REPAIRS AND ALTERATIONS**

- (a) Each person performing a major repair or major alteration shall:-
  - (1) Execute ECAA Form AWS012 at least in duplicate;
  - (2) Give a signed copy of that form to the aircraft owner/operator; and
  - (3) Forward a copy of that form to the Authority, in accordance with Authority instructions, within 48 hours after the aeronautical product is approved for return to service.
- (b) In place of the requirements of paragraph (a), major repairs made in accordance with a manual or specifications acceptable to the Authority, an AMO may:-
  - (1) Use the customer's work order upon which the repair is recorded;
  - (2) Give the aircraft owner a signed copy of the work order and retain a duplicate copy for at least one year from the date of approval for return to service of the aeronautical product;
  - (3) Give the aircraft owner a maintenance release signed by an authorized representative of the AMO and incorporating the following information:-
    - (i) Identity of the aeronautical product;
    - (ii) If an aircraft, the make, model, serial number, nationality and registration marks, and location of the repaired area; and
    - (iii) If an aeronautical product, give the manufacturer's name, name of the part, model, and serial numbers (if any).

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(4) Include the following or a similarly worded statement:-

"The aircraft, airframe, aircraft engine, propeller, or appliance identified above was repaired and inspected in accordance with current Ethiopian Civil Aviation Rules and Standards and is approved for return to service.

Pertinent details of the repair are on file at this Maintenance Organization under Work Order No. \_\_\_\_,

Date

Signed

For signature of authorized representative)

Approved Maintenance Organization name)      Certificate No.)


\_\_\_\_\_."

(Address)

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ECAA form AWS 012

The following form shall be used to record major alterations and repairs.

 <b>MAJOR REPAIR AND ALTERATION</b> <b>(Airframe, Powerplant, Propeller, or Appliance)</b>		Ethiopia
		<small>Use Only</small>
INSTRUCTIONS: Print or type all entries. See Ethiopian Civil Aviation Rules and Standards Part 5, 5.7.1.1(b) and IS: 5.7.1.1 for		
<b>1. Aircraft</b>	Serial Number	Nationality and Registration Mark
<b>2. Owner</b>	Name (As shown on certificate of registration)	Address (As shown on registration certificate)
<b>3. For Office Use Only</b>		
<b>4. Unit Identification</b>		
		Number
<b>Airframe</b>	----- (As described in item 1 above) -----	
<b>Powerplant</b>		
<b>Propeller</b>		
<b>Appliance</b>	Picture	
<b>6. Conformity Statement</b>		
A. Organization Name and Address	B. Kind of License/Organization	C. Certificate/License Number
	Licensed (AMT)    A    P    or    A/P Approved Maintenance Organization Manufacturer AMO	(If an AMO include the appropriate ratings issued for the major repair or alteration)
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 5 of the Ethiopian Civil Aviation Rules and standards and that the information furnished herein is true and correct to the best of my knowledge.		
Date	Signature of Authorized Individual	
<b>7. Approval for Return To Service</b>		
Pursuant to the authority given persons specified below, the unit(s) identified in item 4 was inspected in the manner prescribed by the Authority <input type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED		
	CAA Inspector	Inspection Authorization
	Maintenance Organization	Other
Date of Approval or Rejection		Signature of Authorized Individual
		Certificate or Designation Number

“

### NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

**8. Description of Work Accomplished.**

**(If more space is required, attach additional sheets. Identify each page with aircraft nationality and registration mark and date work completed.)**

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### INSTRUCTIONS FOR COMPLETION OF MAJOR REPAIR AND ALTERATION FORM

Item 1 – Aircraft.

Information to complete the “make,” “model,” and “serial number” blocks will be found on the aircraft manufacturer’s identification plate. The “Nationality and Registration Mark” is the same as shown on Certificate of Aircraft Registration.

Item 2 – Owner.

Enter the aircraft owner’s complete name and address as show on the Certificate of Aircraft Registration.

Item 3 – For Office use only.

Approval may be indicated in Item 3 when the Authority determines that data to be used in performing a major alteration or a major repair complies with accepted industry practices and all applicable Ethiopia rules and standards. Approval is indicated in one of the following methods:

- (1) Approval by examination of data only – one aircraft only: “The data identified herein complies with the applicable airworthiness requirements and is approved for the above described aircraft, subject to conformity inspection by a person authorized in 5.6.1.4.
- (2) Approval by physical inspection, demonstration, testing, etc. of the data and aircraft – one aircraft only” “The alteration or repair identified herein complies with the applicable airworthiness requirements and is approved for the above described aircraft, subject to conformity inspections by a person in 5.6.1.4.”
- (3) Approval by examination of data only – duplication on identical aircraft. “The alteration identified herein complies with the applicable airworthiness requirements and is approved for duplication on identical aircraft make, model, and altered configuration by the original modifier.”

A signature in item 3, “For Office Use Only,” indicates approval of the data described in that section for use in accomplishing the work described under item 8, “Description of the Work Accomplished.” This signature does not indicate CAA approval of the work described under item 8 for return to service.

Item 4 – Unit Identification.

The information blocks under item 4 are used to identify the airframe, powerplant, propeller, or appliance repaired or altered. It is only necessary to complete the blocks for the unit repaired or altered.

Item 5 – Type.

Enter a checkmark in the appropriate column to indicate if the unit was repaired or altered. Item 6 – Conformity Statement.

“A” – Organization’s name and address. Enter name of the AMT, AMO or manufacturer accomplishing the repair or alteration. AMT’s should enter their name and permanent mailing address. Manufacturers and AMOs should enter the name and address under which they do business.

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“B” – Kind of License/ Organization. Check the appropriate box to indicate the type of person or organisation who performed the work.

“C” – Certificate/license number. AMT’s should enter their AMT license number in this block. AMO’s should enter their AMO certificate number and the rating or ratings under which the work was performed.

Manufacturers should enter their type production or Supplemental Type Certificate (STC) number. Manufacturers of Technical Standard Orders (TSO) appliances altering these appliances should enter the TSO number of the appliance altered.

“D” – Compliance Statement. This space is used to certify that the repair or alteration was made in accordance with Part 5 of these rules and standards. When work was performed or supervised by licensed AMT’s not employed by a manufacturer or AMO, they should enter the date the repair or alteration was completed and sign their full name. AMO’s are permitted to authorize persons in their employ to date and sign this conformity statement.

A signature in item 6, “Conformity Statement,” is a certification by the person performing the work that it was accomplished in accordance with applicable CAA and CAA-approved and/or accepted data. The certification is only applicable to that work described under item 8, “Description of Work Accomplished.” This signature does not indicate CAA approval of the work described under item 8 for return to service.

Item 7 – Approval for Return to Service.

ECARAS Part 5 establishes the conditions under which major repairs and alterations to airframes, powerplants, propellers, and/or appliances may be approved for return to service. This portion of the form is used to indicate approval or rejection of the repair or alteration of the unit involved and to identify the person or agency making the airworthiness inspection. Check the “approved” or “rejected” box to indicate the finding. Additionally, check the appropriate box to indicate who made the finding. Use the box labeled “other” to indicate a finding by a person other than those listed. Enter the date the finding was made. The authorized person who made the finding should sign the form and enter the appropriate certificate or designation number.

- (1) Previously Approved Data. The forms will be completed as instructed ensuring that Item 7 is completed as noted above.
- (2) Non-previously Approved Data. The form will be completed as instructed, leaving item 7, “Approval for Return to Service” blank and both copies of the form will be sent to the Authority with supporting data. When the Authority determines that the major repair or alteration data complies with the applicable rules and standards and is in conformity with accepted industry practices, data approval will be recorded by entering an appropriate statement in item 3, “for CAA use only.” Both forms and supporting data will be returned to the applicant who will complete item 7 “Approval for Return to Service.” The applicant will give the original of the form, with its supporting data to the aircraft owner or operator and return the duplicate copy to the Authority for inclusion in the aircraft records at its Aircraft Registry.
- (3) A signature in item 7, “Approval for Return to Service,” does not signify the Authority approval unless the box to the left of “CAA Inspector” has been checked. The other persons listed in item 7 are authorized to “approve for return to service” if the repair or alteration is accomplished using the Authority -approved and/or accepted data, performed in accordance with this part of ECARAS and found to conform.

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### Item 8 – Description of Work Accomplished.

A clear, concise, and legible statement describing the work accomplished should be entered in the item 8 on the reverse side of the form. It is important that the location of the repair or alteration, relative to the aircraft or component, be described. The approved data used as the basis for approving the major repair or alteration for the return to service should be identified and described in this area.

- (1) For example, if a repair was made to a buckled spar, the description and entered in this part might begin by stating, "Removed wing from aircraft and removed skin from outer 6 feet. Repaired buckled spar 49 inches from the tip in accordance with . . . ."and continue with a description of the repair. The description should refer to applicable rules and standards and approved data used to substantiate the airworthiness of the repair or alteration. If the repair or alteration is subject to being covered by skin or other structures, statement should be made certifying that a precover inspection was made and that covered areas were found satisfactory.
- (2) Data used as a basis for the approving major repairs or alterations for return to service shall be approved prior to its use for that purpose and includes: Airworthiness Directives, Advisory Circulars under certain circumstances, TSO parts manufacturing approval, Approved Manufacturer's instructions, kits and service handbooks, type certificates data sheets, and aircraft specifications. Supporting data such as stress analyses, test reports, sketches or photographs should be submitted on the form. These supporting data will be returned to the applicant by the Authority.
- (3) If additional space is needed to describe the repair or alteration, attach sheets bearing the aircraft nationality and registration mark and the date work was completed.
- (4) Showing weight and balance computations under this item is not required; however, it may be done. In all cases where weight and balance of the aircraft are affected, the changes should be entered in the aircraft weight and balance records with the date, signature, and reference to the work performed on the [ECAA Form AWS012] that required the changes.
- (5) ECAA Form AWS012 is not authorized for use on other than Ethiopian-registered aircraft. If a foreign CAA requests the form, as a record of work performed, it may be provided.

### **IS: 5.7.1.7 ALTIMETER SYSTEM TEST AND INSPECTION**

Each person performing the altimeter system tests and inspections required by this Part must comply with the following:

(a) Static pressure system:

- (1) Ensure freedom from entrapped moisture and restrictions.
- (2) Perform a proof test to demonstrate the integrity of the static pressure system in a manner acceptable to the Director General.
- (3) Determine that the static port heater, if installed, is operative.
- (4) Ensure that no alterations or deformations of the airframe surface have been made that would affect the relationship between air pressure in the static pressure system and true ambient static air pressure for any flight condition.

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(b) Altimeter:

- (1) Test by an appropriately rated repair facility in accordance with the following subparagraphs. Unless otherwise specified, each test for performance may be conducted with the instrument subjected to vibration. When tests are conducted with the temperature substantially different from ambient temperature of approximately 25 degrees C., allowance shall be made for the variation from the specified condition.
  - (i) Scale error. With the barometric pressure scale at 29.92 inches of mercury, the altimeter shall be subjected successively to pressures corresponding to the altitude specified in Table I up to the maximum normally expected operating altitude of the airplane in which the altimeter is to be installed. The reduction in pressure shall be made at a rate not in excess of 20,000 feet per minute to within approximately 2,000 feet of the test point. The test point shall be approached at a rate compatible with the test equipment. The altimeter shall be kept at the pressure corresponding to each test point for at least 1 minute, but not more than 10 minutes, before a reading is taken. The error at all test points must not exceed the tolerances specified in Table I.
  - (ii) Hysteresis. The hysteresis test shall begin not more than 15 minutes after the altimeter's initial exposure to the pressure corresponding to the upper limit of the scale error test prescribed in subparagraph (i); and while the altimeter is at this pressure, the hysteresis test shall commence. Pressure shall be increased at a rate simulating a descent in altitude at the rate of 5,000 to 20,000 feet per minute until within 3,000 feet of the first test point (50 percent of maximum altitude). The test point shall then be approached at a rate of approximately 3,000 feet per minute. The altimeter shall be kept at this pressure for at least 5 minutes, but not more than 15 minutes, before the test reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until the pressure corresponding to the second test point (40 percent of maximum altitude) is reached. The altimeter shall be kept at this pressure for at least 1 minute, but not more than 10 minutes, before the test reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until atmospheric pressure is reached. The reading of the altimeter at either of the two test points shall not differ by more than the tolerance specified in Table II from the reading of the altimeter for the corresponding altitude recorded during the scale error test prescribed in paragraph (b)(i).
  - (iii) After effect. Not more than 5 minutes after the completion of the hysteresis test prescribed in paragraph (b)(ii), the reading of the altimeter (corrected for any change in atmospheric pressure) shall not differ from the original atmospheric pressure reading by more than the tolerance specified in Table II.
  - (iv) Friction. The altimeter shall be subjected to a steady rate of decrease of pressure approximating 750 feet per minute. At each altitude listed in Table III, the change in reading of the pointers after vibration shall not exceed the corresponding tolerance listed in Table III.
  - (v) Case leak. The leakage of the altimeter case, when the pressure within it corresponds to an altitude of 18,000 feet, shall not change the altimeter reading by more than the tolerance shown in Table II during an interval of 1 minute.
  - (vi) Barometric scale error. At constant atmospheric pressure, the barometric pressure scale shall be set at each of the pressures (falling within its range of adjustment) that are listed in Table IV, and shall cause the pointer to indicate the equivalent altitude difference shown in Table IV with a tolerance of 25 feet.



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- (2) Altimeters which are the air data computer type with associated computing systems, or which incorporate air data correction internally, may be tested in a manner and to specifications developed by the manufacturer which are acceptable to the Director General.
- (c) Automatic Pressure Altitude Reporting Equipment and ATC Transponder System Integration Test. The test must be conducted by an appropriately rated person under the conditions specified in paragraph (a). Measure the automatic pressure altitude at the output of the installed ATC transponder when interrogated on Mode C at a sufficient number of test points to ensure that the altitude reporting equipment, altimeters, and ATC transponders perform their intended functions as installed in the aircraft. The difference between the automatic reporting output and the altitude displayed at the altimeter shall not exceed 125 feet.
- (d) Records: Comply with the content, form, and disposition of the records prescribed in this Part. The person performing the altimeter tests shall record on the altimeter the date and maximum altitude to which the altimeter has been tested and the persons approving the airplane for return to service shall enter that data in the airplane log or other permanent record.

**TABLE I**

Altitude	Equivalent pressure (inches of mercury)	Tolerance $\pm$ (feet)
-1,000	31.018	20
0	29.921	20
500	29.385	20
1,000	28.856	20
1,500	28.335	25
2,000	27.821	30
3,000	26.817	30
4,000	25.842	35
6,000	23.978	40
8,000	22.225	60
10,000	20.577	80
12,000	19.029	90
14,000	17.577	100
16,000	16.216	110
18,000	14.942	120
20,000	13.750	130
22,000	12.636	140
25,000	11.104	155
30,000	8.885	180

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35,000	7.041	205
40,000	5.538	230
45,000	4.355	255
50,000	3.425	280

**TABLE II—TEST TOLERANCES**

Test	Tolerance (feet)
Case Leak Test	±100
Hysteresis Test:	
First Test Point (50 percent of maximum altitude)	75
Second Test Point (40 percent of maximum altitude)	75
After Effect Test	30

**TABLE III—FRICTION**

Altitude (feet)	Tolerance (feet)
1,000	±70
2,000	70
3,000	70
5,000	70
10,000	80
15,000	90
20,000	100
25,000	120
30,000	140
35,000	160
40,000	180
50,000	250

**TABLE IV—PRESSURE-ALTITUDE DIFFERENCE**

Pressure (inches of Hg)	Altitude difference (feet)
28.10	-1,727

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28.50	-1,340
29.00	-863
29.50	-392
29.92	0
30.50	+ 531
30.90	+ 893
30.99	+ 974

### IS 5.7.1.8 ATC TRANSPONDER TESTS AND INSPECTIONS.

The ATC transponder tests required by this Part may be conducted using a bench check or portable test equipment and must meet the requirements prescribed in paragraphs (a) through (j) of this IS. If portable test equipment with appropriate coupling to the aircraft antenna system is used, operate the test equipment for ATCRBS transponders at a nominal rate of 235 interrogations per second to avoid possible ATCRBS interference. Operate the test equipment at a nominal rate of 50 Mode S interrogations per second for Mode S. An additional 3 dB loss is allowed to compensate for antenna coupling errors during receiver sensitivity measurements conducted in accordance with paragraph (c)(1) when using portable test equipment.

(a) Radio Reply Frequency:

- (1) For all classes of ATCRBS transponders, interrogate the transponder and verify that the reply frequency is  $1090 \pm 3$  Megahertz (MHz).
- (2) For classes 1B, 2B, and 3B Mode S transponders, interrogate the transponder and verify that the reply frequency is  $1090 \pm 3$  MHz.
- (3) For classes 1B, 2B, and 3B Mode S transponders that incorporate the optional  $1090 \pm 1$  MHz reply frequency, interrogate the transponder and verify that the reply frequency is correct.
- (4) For classes 1A, 2A, 3A, and 4 Mode S transponders, interrogate the transponder and verify that the reply frequency is  $1090 \pm 1$  MHz.

(b) Suppression: When Classes 1B and 2B ATCRBS Transponders, or Classes 1B, 2B, and 3B Mode S transponders are interrogated Mode 3/A at an interrogation rate between 230 and 1,000 interrogations per second; or when Classes 1A and 2A ATCRBS Transponders, or Classes 1B, 2A, 3A, and 4 Mode S transponders are interrogated at a rate between 230 and 1,200 Mode 3/A interrogations per second:

- (1) Verify that the transponder does not respond to more than 1 percent of ATCRBS interrogations when the amplitude of  $P_2$  pulse is equal to the  $P_1$  pulse.
- (2) Verify that the transponder replies to at least 90 percent of ATCRBS interrogations when the amplitude of the  $P_2$  pulse is 9 dB less than the  $P_1$  pulse. If the test is conducted with a radiated test signal, the interrogation rate shall be  $235 \pm 5$  interrogations per second unless a higher rate has been approved for the test equipment used at that location.

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(c) Receiver Sensitivity:

- (1) Verify that for any class of ATCRBS Transponder, the receiver minimum triggering level (MTL) of the system is  $-73 \pm 4$  dbm, or that for any class of Mode S transponder the receiver MTL for Mode S format (P6 type) interrogations is  $-74 \pm 3$  dbm by use of a test set either:
  - (i) Connected to the antenna end of the transmission line;
  - (ii) Connected to the antenna terminal of the transponder with a correction for transmission line loss; or
  - (iii) Utilized radiated signal.
- (2) Verify that the difference in Mode 3/A and Mode C receiver sensitivity does not exceed 1 db for either any class of ATCRBS transponder or any class of Mode S transponder.

(d) Radio Frequency (RF) Peak Output Power:

- (1) Verify that the transponder RF output power is within specifications for the class of transponder. Use the same conditions as described in (c)(1)(i), (ii), and (iii) above.
  - (i) For Class 1A and 2A ATCRBS transponders, verify that the minimum RF peak output power is at least 21.0 dbw (125 watts).
  - (ii) For Class 1B and 2B ATCRBS Transponders, verify that the minimum RF peak output power is at least 18.5 dbw (70 watts).
  - (iii) For Class 1A, 2A, 3A, and 4 and those Class 1B, 2B, and 3B Mode S transponders that include the optional high RF peak output power, verify that the minimum RF peak output power is at least 21.0 dbw (125 watts).
  - (iv) For Classes 1B, 2B, and 3B Mode S transponders, verify that the minimum RF peak output power is at least 18.5 dbw (70 watts).
  - (v) For any class of ATCRBS or any class of Mode S transponders, verify that the maximum RF peak output power does not exceed 27.0 dbw (500 watts).

NOTE: The tests in (e) through (j) apply only to Mode S transponders.

- (e) Mode S Diversity Transmission Channel Isolation: For any class of Mode S transponder that incorporates diversity operation, verify that the RF peak output power transmitted from the selected antenna exceeds the power transmitted from the nonselected antenna by at least 20 db.
- (f) Mode S Address: Interrogate the Mode S transponder and verify that it replies only to its assigned address. Use the correct address and at least two incorrect addresses. The interrogations should be made at a nominal rate of 50 interrogations per second.
- (g) Mode S Formats: Interrogate the Mode S transponder with uplink formats (UF) for which it is equipped and verify that the replies are made in the correct format. Use the surveillance formats UF = 4 and 5. Verify that the altitude

## Part 5 - Airworthiness

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reported in the replies to UF = 4 are the same as that reported in a valid ATCRBS Mode C reply. Verify that the identity reported in the replies to UF = 5 are the same as that reported in a valid ATCRBS Mode 3/A reply. If the transponder is so equipped, use the communication formats UF = 20, 21, and 24.

- (h) Mode S All-Call Interrogations: Interrogate the Mode S transponder with the Mode S-only all-call format UF = 11, and the ATCRBS/Mode S all-call formats (1.6 microsecond P4 pulse) and verify that the correct address and capability are reported in the replies (downlink format DF = 11).
- (i) ATCRBS-Only All-Call Interrogation: Interrogate the Mode S transponder with the ATCRBS-only all-call interrogation (0.8 microsecond P4 pulse) and verify that no reply is generated.
- (j) Squitter: Verify that the Mode S transponder generates a correct squitter approximately once per second.
- (k) Records: Comply with the content, form, and disposition of the records required by this Part.

### **IS: 5.9 PROCEDURES FOR ISSUANCE OF EXPORT CERTIFICATE OF AIRWORTHINESS**

- (a) The Ethiopian Civil Aviation Authority when intending to issue an Export Certificate of Airworthiness will follow closely the procedures required to be followed for the renewal of a Certificate of Airworthiness and any applicable requirements specified by the importing State.
- (b) The depth to which the Aircraft Registration and Airworthiness Certification Directorate wishes to apply these procedures will however depend to a large extent on how recent its involvement with the aircraft in question has been.
- (c) The records to be produced may also be restricted to those covering maintenance performed since the Authority last carried out an inspection on the aircraft.



CERTIFICATE NO. \_\_\_\_\_

**ETHIOPIAN CIVIL AVIATION AUTHORITY**

**Export Certificate of Airworthiness (For Aircraft)**

This certifies that the aircraft identified below and detailed in (INSERT TYPE CERTIFICATE NO.) has been examined and, as of the date of this certificate, is considered airworthy in accordance with the Ethiopian Civil Aviation Rules and Standards, and is in compliance with those special requirements of the importing State, except as stated below.

**Note:** This certificate in no way attests to compliance with any agreements or contracts between the vendor and purchaser, nor does it constitute authority to operate an aircraft.

**Aircraft Manufacturer** \_\_\_\_\_

**Aircraft Model** \_\_\_\_\_

**Aircraft Serial No.** \_\_\_\_\_

**Total Time** \_\_\_\_\_

**Engine Manufacturer** \_\_\_\_\_

**Engine Model** \_\_\_\_\_

**Engine Serial No.** \_\_\_\_\_

- 1. Total Time \_\_\_\_\_
- 2. Total Time \_\_\_\_\_
- 3. Total time \_\_\_\_\_
- 4. Total time \_\_\_\_\_

**Propeller Manufacturer** \_\_\_\_\_

**Propeller Model** \_\_\_\_\_

**Propeller Serial No.** \_\_\_\_\_

- 1. Total Time \_\_\_\_\_
- 2. Total time \_\_\_\_\_
- 3. Total time \_\_\_\_\_
- 4. Total Time \_\_\_\_\_

NEW     USED

**Exceptions:** \_\_\_\_\_

**State to which exported** \_\_\_\_\_

\_\_\_\_\_  
**Date:**

\_\_\_\_\_  
**for Ethiopian Civil Aviation Authority**