

# **GHANA CIVIL AVIATION (FLIGHT STANDARDS) DIRECTIVES**



## **PART 5 – AIRWORTHINESS**

**NOVEMBER, 2018**

## INTRODUCTION

**Part 5** presents regulatory requirements for the airworthiness of aircraft registered in Ghana and or expected to operate in Ghana using the standards and recommended practices in ICAO Annex 8.

In most cases, there are aircraft registered in Ghana that were designed in one Contracting State and manufactured in another Contracting State. In addition, Ghana may have AOC holders who operate aircraft registered in another Contracting State, with different states of design and manufacture. Additionally, Ghana may have AOC holders who are part of a regional consortium, with maintenance facilities in a neighboring country.

Proper airworthiness of aircraft registered in Ghana is the result of communication. The Directives require all persons operating Ghana registered aircraft to notify the Authority when certain events occur. The Authority is required to open lines of communication with the State of Design and or the State of Manufacture, so that the Authority can receive all service bulletins and airworthiness directives for each type of aircraft operating in Ghana. Maintenance requirements are set forth in Part 5 for persons who are neither employees of an Approved Maintenance Organization (AMO) nor work for an air operator.

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## 5.1 GENERAL

### 5.1.1 APPLICABILITY

This Directive prescribes the requirements for-

- (a) Certification of aircraft and aeronautical components;
- (b) Issuance of Airworthiness Certificates and other certifications for aeronautical products;
- (c) Continued airworthiness of aircraft and aeronautical components;
- (d) Rebuilding and modifications of aircraft and aeronautical components;
- (e) Maintenance and preventive maintenance of aircraft and aeronautical components;
- (f) Aircraft inspection requirements; and
- (g) Air operator aircraft maintenance and inspection requirements.

### 5.1.2 DEFINITIONS

For the purpose of this Part, the following definitions shall apply-

**Aeroplane.** A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

**Aircraft.** Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**Airworthy.** The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation.

**Anticipated operating conditions.** Those conditions which are known from experience or which can be reasonably envisaged to occur during the operational life of the aircraft taking into account the operations for which the aircraft is made eligible, the conditions so considered being relative to the meteorological state of the atmosphere, to the configuration of terrain, to the functioning of the aircraft, to the efficiency of personnel and to all the factors affecting safety in flight. Anticipated operating conditions do not include:

- a) those extremes which can be effectively avoided by means of operating procedures; and
- b) those extremes which occur so infrequently that to require the Standards to be met in such extremes would give a higher level of airworthiness than experience has shown to be necessary and practical.

**Appropriate airworthiness requirements.** The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration (see 5.4.8 of this Part).

**Approved.** Accepted by a Contracting State as suitable for a particular purpose.

**Bridging Maintenance** is a set of tasks required to transfer an **aircraft** from one **Maintenance Schedule** to another. Every operation is unique and hence an **aircraft** may have been maintained to the same tasks at a different frequency or to different **maintenance** standards in its previous operation.

**Category A.** With respect to helicopters, means a multi-engine helicopter designed with engine and system isolation features and capable of operations using take-off and landing data scheduled under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight or safe rejected take-off.

**Category B.** With respect to helicopters, means a single-engine or multi-engine helicopter which does not meet Category A standards. Category B helicopters have no guaranteed capability to continue safe flight in the event of an engine failure, and a forced landing is assumed.

**Configuration (as applied to the aeroplane).** A particular combination of the positions of the moveable elements, such as wing flaps and landing gear, etc., that affect the aerodynamic characteristics of the aeroplane.

**Continuing airworthiness.** The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

**Critical engine(s).** The engine(s) failure of which gives the most adverse effect on the aircraft characteristics relative to the case under consideration.

**Design landing mass.** The maximum mass of the aircraft at which, for structural design purposes, it is assumed that it will be planned to land.

**Design take-off mass.** The maximum mass at which the aircraft, for structural design purposes, is assumed to be planned to be at the start of the take-off run.

**Design taxiing mass.** The maximum mass of the aircraft at which structural provision is made for load liable to occur during use of the aircraft on the ground prior to the start of take-off.

**Discrete source damage.** Structural damage of the aeroplane that is likely to result from: impact with a bird, uncontained fan blade failure, uncontained engine failure, uncontained high-energy rotating machinery failure or similar causes.

**Factor of safety.** A design factor used to provide for the possibility of loads greater than those assumed, and for uncertainties in design and fabrication.

**Final approach and take-off area (FATO).** A defined area over which the final phase of the approach manoeuvre to hover or landing is completed and from which the take-off manoeuvre is commenced. Where the FATO is to be used by performance Class 1 helicopters, the defined area includes the rejected take-off area available.

**Helicopter.** A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

**Human Factors principles.** Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

**Human performance.** Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

**Landing surface.** That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft landing in a particular direction.

**Limit loads.** The maximum loads assumed to occur in the anticipated operating conditions.

**Load factor.** The ratio of a specified load to the weight of the aircraft, the former being expressed in terms of aerodynamic forces, inertia forces, or ground reactions.

**Maintenance.** The performance of tasks required to ensure the continuing airworthiness of an aircraft or an aeronautical product, including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

**Major modification.** Defined in IS: 5.1.2.

**Major repair.** Defined in IS: 5.1.2.

**Modification.** The alteration of an aircraft or aeronautical product in conformity with an approved standard.

**Organization responsible for the type design.** The organization that holds the type certificate, or equivalent document, for an aircraft, engine or propeller type, issued by a Contracting State.

**Overhaul.** The restoration of an aircraft or aeronautical product using methods, techniques, and practices acceptable to the Authority, including disassembly, cleaning, and inspection as

permitted, repair as necessary, and reassembly; and 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 State of Design, holder of the type certificate, supplemental type certificate, or a material, part, process, or appliance approval under Part Manufacturing Authorisation (PMA) or Technical Standard Order (TSO).

**Preventative maintenance.** Defined in IS: 5.1.2.

**Performance Class 1 helicopter.** A helicopter with performance such that, in case of engine failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area.

**Performance Class 2 helicopter.** A helicopter with performance such that, in case of engine failure, it is able to safely continue the flight, except when the failure occurs prior to a defined point after take-off or after a defined point before landing, in which cases a forced landing may be required.

**Performance Class 3 helicopter.** A helicopter with performance such that, in case of engine failure at any point in the flight profile, a forced landing must be performed.

**Powerplant.** The system consisting of all the engines, drive system components (if applicable), and propellers (if installed), their accessories, ancillary parts, and fuel and oil systems installed on an aircraft but excluding the rotors for a helicopter.

**Pressure-altitude.** An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere.

**Rebuild.** The restoration of an aircraft/aeronautical product by using methods, techniques, and practices acceptable to the Authority, when 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. This work will be performed by only the manufacturer or an organisation approved by the manufacturer, and authorised by the State of Registry.

**Rendering (a Certificate of Airworthiness) valid.** The action taken by a Contracting State, as an alternative to issuing its own Certificate of Airworthiness, in accepting a Certificate of Airworthiness issued by any other Contracting State as the equivalent of its own Certificate of Airworthiness.

**Repair.** The restoration of an aeronautical product to an airworthy condition as defined by the appropriate airworthiness requirements.



**Required inspection items:** Maintenance items and/or alterations that must be inspected by a person other than the one performing the work, and include at least those that could result in a failure, malfunction, or defect endangering the safe operation of aircraft, if not properly performed or if improper parts or materials are used.

**Satisfactory evidence.** A set of documents or activities that a Contracting State accepts as sufficient to show compliance with an airworthiness requirement.

**Standard atmosphere.** An atmosphere defined as follows:

a) the air is a perfect dry gas;

b) the physical constants are:

- Sea level mean molar mass:  
 $M_0 = 28.964\ 420 \times 10^{-3} \text{ kg mol}^{-1}$
- Sea level atmospheric pressure:  
 $P_0 = 1013.250 \text{ hPa}$
- Sea level temperature:  
 $t_0 = 15^\circ\text{C}$   
 $T_0 = 288.15 \text{ K}$
- Sea level atmospheric density:  
 $\rho_0 = 1.225\ 0 \text{ kg m}^{-3}$
- Temperature of the ice point:  
 $T_i = 273.15 \text{ K}$
- Universal gas constant:  
 $R^* = 8.31432 \text{ JK}^{-1}\text{mol}^{-1}$

c) the temperature gradients are:

Geopotential altitude (km)		Temperature gradient (Kelvin per standard geopotential kilometre)
From	To	
-5.0	11.0	-6.5
11.0	20.0	0.0
20.0	32.0	+1.0
32.0	47.0	+2.8
47.0	51.0	0.0
51.0	71.0	-2.8
71.0	80.0	-2.0

*Note 1.— The standard geopotential metre has the value  $9.80665 \text{ m}^2 \text{ s}^{-2}$ .*

*Note 2.— See Doc 7488 for the relationship between the variables and for tables giving the corresponding values of temperature, pressure, density and geopotential.*

*Note 3.— Doc 7488 also gives the specific weight, dynamic viscosity, kinematic viscosity and speed of sound at various altitudes.*

**State of Design.** The State having jurisdiction over the organization responsible for the type design.

**State of Manufacture.** The State having jurisdiction over the organization responsible for the final assembly of the aircraft, engine or propeller.

**State of Registry.** The State on whose register the aircraft is entered.

*Note.— In the case of the registration of aircraft of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport (Doc 9587).*

**Take-off surface.** That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft taking off in a particular direction.

**Type Certificate.** A document issued by a Contracting State to define the design of an aircraft, engine or propeller type and to certify that this design meets the appropriate airworthiness requirements of that State.

**Type design.** The set of data and information necessary to define an aircraft, engine or propeller type for the purpose of airworthiness determination.

**Ultimate load.** The limit load multiplied by the appropriate factor of safety.

### 5.1.3 ABBREVIATIONS

The following acronyms are used in this Part:

AOC	-	Air Operator Certificate
AMO	-	Approved Maintenance Organisation
MEL	-	Minimum Equipment List
PIC	-	Pilot in command
TSO	-	Technical Standard Order
C of A	-	Certificate of Airworthiness

## **5.2 AIRCRAFT AND COMPONENT ORIGINAL CERTIFICATION**

### **5.2.1 APPLICABILITY**

- (1) This Subpart describes the provisions and designation of applicable rules for original certification of aircraft and related aeronautical products.
- (2) The Authority will hold this Subpart reserved until such time as it has received an application for Type Certificates, Production Certificates or other related approvals.
- (3) Any applicant for a production certificate for any aircraft or aeronautical product thereof for manufacture in Ghana shall comply with the type certificate as required by the State of Design for approval.
- (4) At such times as the application for production is presented the Authority will make available suitable Directives or provisions for the issuance of an airworthiness certificate, or airworthiness document as appropriate for the product concerned.

### **5.2.2 TYPE ACCEPTANCE CERTIFICATE**

This Subpart prescribes:

- (a) requirements for the issue of type acceptance certificates for aircraft; and
- (b) rules governing the holders of those certificates; and
- (c) rules dealing with the NAAs of foreign countries.

*Note: This provision shall not be applicable to aircraft issued with type acceptance certificate by the Authority prior to the coming into force of this Directive.*

### **5.2.3 RECOGNISED FOREIGN COUNTRIES**

The Authority shall accept the Type Certificates (TCs) or equivalent documents from any of the underlisted recognised countries:

- (a) Canada;
- (b) Federal Republic of Germany;
- (c) The French Republic;
- (d) The Kingdom of the Netherlands;
- (e) The United Kingdom; and
- (f) The United States of America.

*Note: An aircraft type that is a subject of a TC issued by the European Aviation Safety Agency (EASA) shall also be eligible for the issuance of a type acceptance certificate.*

**5.2.4 ELIGIBILITY**

- (1) Only Type certificate holders of recognised countries are eligible to apply to the Authority for a type acceptance certificate.
- (2) An applicant other than those specified in (1) of this paragraph may be eligible for acceptance provided the aircraft type in question is type certificated by a recognised country.

**5.2.5 TYPE ACCEPTANCE CERTIFICATE FOR IMPORTED AIRCRAFT CERTIFICATED BY NATIONAL AVIATION AUTHORITY OF RECOGNISED COUNTRY**

- (1) The Authority may issue a type acceptance certificate for an aircraft manufactured in a foreign country, without making the type acceptance certificate subject to any conditions, if:
  - (a) a foreign type certificate or equivalent document issued by the national aviation authority of a recognised country is in force for aircraft of that type; and
  - (b) the applicant has submitted to the Authority:
    - (i) evidence that the type design has been approved by the national aviation authority of the recognised country by issue of a type certificate or equivalent document; and
    - (ii) details of any equivalent safety determinations or waivers (however described) that were made in the course of the type certification; and
    - (iii) a copy of the applicable type certificate data sheet; and
    - (iv) a copy of the flight manual that contains all the available options applicable to the type, and that was approved by the national aviation authority that issued the foreign type certificate; and
    - (v) a copy of the manufacturer's instructions for continued airworthiness of the aircraft; and
    - (vi) a copy of the parts catalogue for the aircraft; and
    - (vii) a list of all current field service documents applicable to the aircraft; and
    - (viii) an undertaking from the holder of the foreign type certificate to continue to supply to the Authority service bulletins and

instructions for the continuing airworthiness of aircraft of that type and any amendments of the documents mentioned in subparagraphs (iv), (v), (vi) and (vii) and

- (ix) compliance to established factory acceptance procedures.
- (2) 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 may be prescribed by the Authority.

### **5.3 SUPPLEMENTAL TYPE CERTIFICATES**

#### **5.3.1 APPLICABILITY**

This Subpart prescribes procedural requirements for the issue of supplemental type certificates.

#### **5.3.2 ISSUANCE OF A SUPPLEMENTAL TYPE CERTIFICATE**

- (1) No person shall alter a product by introducing a major change in type design, which is not great enough to require a new application for a type certificate, without applying for a Supplemental Type Certificate from the regulatory agency of the State of Design that approved the type certificate for that product, or from the State of Registry of the Aircraft. The application shall be made in accordance with the procedures prescribed by that State.
- (2) The Authority, upon receiving an application for a supplemental type certificate for an aircraft registered in Ghana shall forward the request to the State of Design.

### **5.4 AIRWORTHINESS CERTIFICATES**

#### **5.4.1 APPLICABILITY**

- (1) This Subpart prescribes general requirements for the issue of airworthiness certificates and other certifications for aeronautical products registered in Ghana.
- (2) No person shall operate an aircraft registered in Ghana without the appropriate and valid airworthiness certificates for that aircraft.
- (3) The Authority shall issue a Certificate of Airworthiness for aircraft registered in Ghana based on satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements (type certificate).
- (4) An aircraft to which a certificate of airworthiness is issued shall be operated in accordance with the terms and conditions of that certificate and within the approved operating limitations in its flight manual.

**5.4.2 ELIGIBILITY**

- (1) Any owner of an aircraft registered in Ghana, or agent of the owner, may apply for an airworthiness certificate for that aircraft.
- (2) Each applicant for an airworthiness certificate shall apply in a form and manner acceptable to the Authority.
- (3) An aircraft registered in Ghana shall not be issued an airworthiness certificate unless it is type certificated in a recognised State and there exists in force in respect of that aircraft, a type certificate and type certificate data sheet accepted by the Authority.

**5.4.3 CLASSIFICATIONS OF AIRWORTHINESS CERTIFICATES**

- (1) Standard Airworthiness Certificates shall be issued for aircraft in the specific category and model designated by the State of Design in the type certificate.
- (2) The Authority may issue a Special Airworthiness Certificate in the form of a restricted certificate or special flight permit.
- (3) The Authority may issue a Certificate of Airworthiness for export for aircraft exported out of Ghana.

**5.4.4. AMENDMENT OF AIRWORTHINESS CERTIFICATE**

The Authority may amend or modify an Airworthiness Certificate:

- (a) Upon application from an operator; or
- (b) On its own initiative.

**5.4.5 TRANSFER OR SURRENDER OF AIRWORTHINESS CERTIFICATE**

- (1) An owner may transfer an Airworthiness Certificate-
  - (a) To the lessee upon lease of an aircraft within or outside Ghana; or
  - (b) To the buyer upon sale of the aircraft within Ghana.
- (2) An owner shall surrender the Airworthiness Certificate for the aircraft to the issuing Authority upon sale of that aircraft outside of Ghana.

**5.4.6 EFFECTIVE DATES OF AIRWORTHINESS CERTIFICATE**

- (1) Airworthiness Certificates are effective as follows unless sooner surrendered, suspended or revoked, or a special termination date is otherwise established by the Authority-
  - (a) A special flight permit is valid for the period of time specified in the permit.
  - (b) A Certificate of Airworthiness shall be renewed or shall remain valid, for a period of twelve (12) months from the date of issue and its continuing Airworthiness shall be determined by a periodical inspection at appropriate intervals having regard to lapse of time and type of service.
  - (c) The Authority may extend the validity of the C of A for a limited period of time upon application by the AOC holder.
- (2) When an aircraft imported for registration in Ghana has a Certificate of Airworthiness issued by another Contracting State, the Authority may, as an alternative to the issuance of its own Certificate of Airworthiness, establish validity by suitable authorisation to be carried with the former Certificate of Airworthiness accepting it as the equivalent of a Certificate of Airworthiness issued by the Authority. The validity of the authorisation shall not extend beyond the period of validity of the Certificate of Airworthiness or one (1) year, whichever is less.
- (3) The Authority shall issue or receive all classifications of Airworthiness Certificate in the English Language.

**5.4.7 AIRCRAFT IDENTIFICATION**

Each applicant for an airworthiness certificate shall show that the aircraft is properly registered and marked, including identification plates.

**5.4.8 ISSUE OF AIRWORTHINESS CERTIFICATES**

- (1) The Authority shall issue a standard Airworthiness certificate where-
  - (a) The applicant presents evidence to the Authority that the aircraft conforms to a type design approved under a type certificate and a supplemental type certificate where applicable and codes of the State of Design, State of Manufacture or State of Registry as applicable; and
  - (b) In the case of initial C of A, the applicant presents evidence to the Authority that all required operational and maintenance actions and procedures under applicable Airworthiness Directives, have been fully carried out in accordance with the compliance times set out in the Airworthiness Directives; and
  - (c) The aircraft has been inspected in accordance with the performance rules of this Directive for inspections and found airworthy by persons

authorised by the Authority to make such determinations within the last thirty (30) calendar days; and

- (d) That all outstanding Minimum Equipment List (MEL) and Configuration Deviation List (CDL) items have been cleared; and
  - (e) The Authority finds after an inspection that the aircraft conforms to type design and is in condition for safe operation; and
  - (f) All design or certification data and continuing airworthiness information are in the English language; and
  - (g) It is satisfied that, in the case of an initial aircraft registration, the aircraft, provided it has not come off the production line, has undergone a heavy check; or bridging maintenance as may be applicable; and
  - (h) The aircraft is being maintained in accordance with a maintenance programme or schedule approved by the Authority; and
  - (i) All required aircraft records are on file and available for inspection.
- (2) Notwithstanding sub-section (1)(b), where the Director-General is of the opinion that an Airworthiness Directive is of a crucial nature and is likely to endanger public safety, the Applicant shall be required to be fully compliant with the Airworthiness Directive irrespective of the timelines stated therein.
- (3) All aeroplanes with MTOW over 5700 kg and all helicopters with MTOW over 3175 kg, shall be weighed prior to the issue of the initial certificate of airworthiness and in accordance with the manufactures weight and balance manual. The aircraft shall be re-weighed at periods specified in the approved maintenance schedule but in any event not to exceed four (4) years. The weighing report of the aircraft shall also be available during the renewal of the certificate of airworthiness.
- (4) All standard Airworthiness Certificates shall be valid for a period of 1 year and may be renewed or re-issued subject to (1)(b) of this subpart being fulfilled.
- (5) The Authority may validate an Airworthiness Certificate issued by another Contracting State upon registration of the aircraft in Ghana for the period specified in that certificate.
- (6) All modifications and repairs shall where applicable comply with airworthiness requirements acceptable to the Authority. Substantiating data supporting compliance with the airworthiness requirements shall be retained. However, in the case of a major repair or major modification, the work must have been done in accordance with technical, including engineering, data approved by the state of design and accepted by the Authority.

*Note: See Sample Standard Airworthiness Certificate in IS: 5.4.8*



**5.4.9 AIRWORTHINESS DIRECTIVES**

- (1) Upon registration of an aircraft in Ghana, the Authority shall notify the State of Design of the aircraft of the registration in Ghana and request that the Authority receive any and all airworthiness directives addressing that aircraft, airframe, aircraft engine, propeller, appliance, or component part.
- (2) 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, that airworthiness directive is directly adopted by Ghana and shall apply to Ghana registered civil aircraft of the type identified in that airworthiness directive.
- (3) The Authority may adopt manufacturer’s service bulletins and other sources of data, or develop and prescribe inspections, procedures and limitations, for mandatory compliance pertaining to affected aircraft in Ghana.
- (4) Operators of aeroplanes over 5,700kg shall obtain and assess airworthiness information from the type design organization.
- (5) Operators of aeroplanes over 5,700kg shall monitor and assess maintenance and operational experience of their personnel with respect to airworthiness of the aeroplanes they maintain.
- (6) No person may operate any Ghana registered civil aircraft to which the measures of this subsection apply, except in accordance with the applicable directives.

**5.4.10 COMMERCIAL AIR TRANSPORT**

The Authority shall consider an Airworthiness Certificate valid for commercial air transport only when accompanied by an evaluation form issued by the Authority which identifies the specific types of commercial air transport authorised.

**5.4.11 ISSUE OF SPECIAL AIRWORTHINESS CERTIFICATES**

- (1) The Authority may issue a special Airworthiness Certificate to an aircraft that does not qualify for a Standard Airworthiness Certificate.
- (2) Aircraft holding special Airworthiness Certificates shall be subject to operating limitations within Ghana and may not make international flights. The Authority shall issue specific operating limitations for each special Airworthiness Certificate.
- (3) The Authority may issue special Flight Permits to an aircraft that is capable of safe flight, but unable to meet applicable airworthiness requirements, for the purpose of-
  - (a) Flying to a base where repairs, modifications, maintenance, or inspections are to be performed, or to a point of storage;
  - (b) Testing after repairs, modifications, or maintenance have been performed;

- (c) Delivering or exporting the aircraft;
  - (d) Evacuating aircraft from areas of impending danger; and
  - (e) 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.
- (4) The Authority may issue a special Flight Permit with continuing authorisation issued to an aircraft that may not meet applicable airworthiness requirements but is capable of safe flight, for the purpose of flying the aircraft to a base where maintenance or alterations are to be performed. The permit issued under this paragraph is an authorisation, including conditions and limitations for flight, which is set forth in the AOC Holder's specific operating provisions or the relevant Aircraft Flight Manual (AFM). This permit under this paragraph may be issued to an AOC Holder certificated under Part 9 of these Directives.
- (5) 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 organisation, authorised in accordance with this Part, stating that the subject aircraft has been inspected and found to be safe for the intended flight.
- (6) The operator shall obtain all required overflight authorisations from countries to be overflown on flights outside Ghana.

#### **5.4.12 ISSUE OF EXPORT CERTIFICATE OF AIRWORTHINESS**

- (1) The Authority may issue an Export Certificate of Airworthiness to an applicant for the purpose of exporting an aircraft or aeronautical product and where it is required by the importing State.
- (2) An Export Certificate of Airworthiness issued under this Subpart for an aircraft shall be in the format as may be prescribed by the Authority.
- (3) The issue of an Export Certificate of Airworthiness shall not amount to an authorization of the aircraft for flight.
- (4) An Export Certificate of Airworthiness may be issued with a deviation as listed below provided that the applicant for an Export Certificate of Airworthiness submits to the Authority a written statement from the State of the importer, in accordance with paragraph 10(b):
  - (a) that the requirements of this Subpart that have not been met; and
  - (b) stating any differences in configuration between the exported aircraft and the type accepted aircraft.

- (5) The applicant for an Export Certificate of Airworthiness shall be the owner of the aircraft or a person authorised by the owner.
- (6) Each application for an Export Certificate of Airworthiness shall provide satisfactory evidence of the following:
- (a) the name and address of the applicant; and
  - (b) that the aircraft conforms to a type design acceptable to the State of Import; and
  - (c) that the State of Import formally accepts any deviations to certification standards to be listed on the certificate; and
  - (d) the aircraft possesses, or could qualify for, a Certificate of Airworthiness under GCADs Part 5; and
  - (e) the aircraft is issued with the appropriate flight manual; and
  - (f) the aircraft is issued with any applicable Noise Certificate in accordance with GCADs Part 16; and
  - (g) a mass and balance report has been completed, with a loading schedule where applicable; and
  - (h) the aircraft has undergone a routine maintenance inspection in accordance with the approved maintenance programme, or an equivalent inspection acceptable to the Authority; and
  - (i) any flight check required by the Authority has been carried out and the aircraft handling and systems conform to the approved flight manual; and
  - (j) the applicable airworthiness directives have been complied with; and
  - (k) up-to-date and complete log books, design change and repair records, and other such historical records required to support the continued airworthiness of the aircraft; and
  - (l) a description of any methods used, including the method's duration of effectiveness, for the preservation and packaging of aircraft to protect them against corrosion and damage while in transit or storage; and
  - (m) details of any special instructions for inspection, maintenance and operation for the aircraft; and
  - (n) supporting documentation for any variances to this Subpart; and

- (o) such further particulars relating to the aircraft and applicant as may be required by the Authority.
- (7) Any programmed transponder with a code allocated by the Authority shall be recorded in the aircraft logbook pending re-allocation by the new State of Registry.
- (8) Any coded emergency locator transmitter registered with the Authority shall be recorded in the aircraft logbook pending re-registration by the new State of Registry.
- (9) The applicant shall make the aircraft and associated data available for any inspections as the Authority may require.
- (10) The applicant for the grant of an Export Certificate of Airworthiness shall provide, to the satisfaction of the Authority, evidence that:
  - (a) the applicant meets the applicable requirements of this Subpart in a manner acceptable to the Authority; and
  - (b) the granting of the Certificate is not contrary to the interests of aviation safety.
- (11) An Export Certificate of Airworthiness issued under this Subpart is valid at the date of issue but the importing State is responsible for determining the period for which it will accept it as valid.

## **5.5 CONTINUING AIRWORTHINESS OF AIRCRAFT AND COMPONENTS**

### **5.5.1 APPLICABILITY**

This Subpart prescribes rules governing the continuing airworthiness of all aircraft, engines, propellers and associated parts in Ghana whether operating inside or outside the borders of Ghana.

### **5.5.2 RESPONSIBILITY**

The owner 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-

- (a) All maintenance, overhaul, modifications and repairs which affect airworthiness are performed as prescribed by the State of Registry;
- (b) Maintenance personnel make appropriate entries in the aircraft maintenance records certifying that the aircraft is airworthy;
- (c) The approval for return to service (maintenance release) is completed and signed to the effect that the maintenance work performed has been completed satisfactorily and in accordance

with the Maintenance Programme and the prescribed methods and shall contain the following information:

- (i) basic details of the maintenance carried out including detailed reference of the approved data used;
  - (ii) Date such maintenance was completed;
  - (iii) When applicable, the identity of the Approved Maintenance Organisation; and
  - (iv) The identity of the person or persons signing the release.
- (d) In the event there are open discrepancies, the maintenance release includes a list of the uncorrected maintenance items and these items are made a part of the aircraft permanent record.
- (e) The operational and emergency equipment necessary for the intended flight is serviceable; and
- (f) The Certificate of Airworthiness of the aircraft remains valid.

### 5.5.3 GENERAL

- (1) No person shall perform maintenance, preventive maintenance, or modifications on an aircraft other than as prescribed in this Directive.
- (2) No person shall 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 specific operating provisions approved under Part 9, or in accordance with the inspection program approved under Part 8, have been complied with.
- (3) No person shall operate an aeronautical product to which an Airworthiness Directive applies, issued either by the State of Design, or State of Manufacture and adopted for Ghana registered aircraft by the Authority, or by the State of Registry for aircraft operated within Ghana, except in accordance with the requirements of that Airworthiness Directive.
- (4) 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 shall inform the State of Design.
- (5) No person shall transmit sensitive aviation security information when distributing mandatory continuing airworthiness information.
- (6) Sensitive aviation security information shall be transmitted securely to the appropriate authority in the State of Design in accordance with the Ghana civil Aviation Security Directives.

**5.5.4 REPORTING OF FAILURES, MALFUNCTIONS, AND DEFECTS**

- (1) Operators and maintenance organizations of aeroplanes over 5,700kg and helicopters over 3,175kg maximum take-off weight shall report to the Authority any failures, malfunctions, or defects that result in at least the following-
- (a) Fires during flight and whether the related fire-warning system properly operated;
  - (b) Fires during flight not protected by a related fire-warning system;
  - (c) False fire warning during flight;
  - (d) An engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;
  - (e) An aircraft component that causes accumulation or circulation of smoke, vapour, or toxic or noxious fumes in the crew compartment, cabin or cargo compartment during flight;
  - (f) Engine shutdown during flight because of flameout;
  - (g) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;
  - (h) Engine shutdown during flight due to foreign object ingestion or icing;
  - (i) Shutdown during flight of more than one engine;
  - (j) A propeller feathering system inability to control overspeed during flight;
  - (k) A fuel system or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;
  - (l) An unintended landing gear extension or retraction, or opening or closing of landing gear doors during flight.
  - (m) Brake system components that result in loss of brake actuating force when the aircraft is in motion on the ground;
  - (n) Aircraft structural damage that requires major repair;
  - (o) Cracks, permanent deformation, or corrosion of aircraft structure if more than the maximum acceptable to the manufacturer or the Authority;
  - (p) Aircraft components or systems malfunctions that result in taking emergency actions during flight (except action to shut down an engine);

- (q) 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;
  - (r) Any abnormal vibration or buffeting caused by a structural or system malfunction, defect, or failure;
  - (s) A failure or malfunction of more than one attitude, airspeed, or altitude instrument during a given operation of the aircraft.
  - (t) 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; or
  - (u) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed.
- (2) Each report required by this Subsection shall-
- (a) Be made within 3 days after determining that the failure, malfunction, or defect required to be reported has occurred; and
  - (b) 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 authorisation, 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, malfunction, or defect.
- (3) The Authority, if the State of Registry of the aircraft, shall submit all such reports upon receipt to the State of Design and the organization responsible for the type design for appropriate action.
- (4) The Authority, if not the State of Registry of the aircraft, shall submit all such reports upon receipt to the State of Registry.
- (7) Where a continuing airworthiness safety issue is associated with a modification, the Authority, if the State of Registry, shall submit all such reports upon receipt to the organization responsible for the design of the modification.

*Note: Guidance on the arrangement between the Authority and the State of Design is contained in ICAO Circular 95 \*Continuing Airworthiness of Aircraft in Service\* Guidance on interpretation of the organisation for the*

*type design is contained in the Airworthiness Technical Manual ICAO Doc 9051.*

## **5.6 AIRCRAFT MAINTENANCE AND INSPECTION**

### **5.6.1 APPLICABILITY**

This Subpart prescribes rules governing the maintenance and inspection of any aircraft having a Ghana Airworthiness Certificate or associated aeronautical products.

### **5.6.2 PERSONS AUTHORISED TO PERFORM MAINTENANCE, PREVENTIVE MAINTENANCE, AND MODIFICATIONS**

- (1) The persons authorised to perform maintenance subject to this Subpart include-
  - (a) A pilot authorised by the Authority;
  - (b) A person performing maintenance under the supervision of an aviation maintenance engineer;
  - (c) An aviation maintenance engineer;
  - (d) An AOC holder, approved to perform maintenance under an equivalent system; and
  - (e) An AMO.
- (2) This Subpart outlines the privileges and limitations of these entities with respect to the extent and type of work they may perform regarding-
  - (a) Maintenance;
  - (b) Preventive Maintenance;
  - (c) Modification;
  - (d) Inspection; and
  - (e) Approvals for return to service.

### **5.6.3 PRIVILEGES AND LIMITATIONS OF PERSONS AUTHORISED TO PERFORM MAINTENANCE**

No person shall perform any task defined as maintenance on an aircraft or aeronautical products, except the following-

- (a) A pilot may perform preventive maintenance as authorised by the Authority on any aircraft owned or operated by that pilot so long as the aircraft is not listed for use by an AOC holder.



- (b) A person working under the supervision of a aviation maintenance engineer, may perform the maintenance, preventive maintenance, and modifications that the supervisory aviation maintenance engineer is authorised 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.
- (c) A licensed aviation maintenance engineer may perform or supervise the maintenance or modification of an aircraft or aeronautical product for which he or she is rated subject to the limitation of Part 2, Section 2.5 of these Flight Standards Directives.
- (d) An AMO may perform aircraft maintenance within the limits specified by the Authority.
- (e) The AOC holder may perform aircraft maintenance within the limits specified by the Authority.
- (f) 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 Authorisation, 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 of these Directives on aircraft, it manufactures, while currently operating under a production certificate or under a currently approved production inspection system for such aircraft.

#### **5.6.4 AUTHORISED PERSONNEL TO APPROVE FOR RETURN TO SERVICE**

No person or entity, other than the Authority, shall approve an aircraft, airframe, aircraft engine, propeller, appliance, or component part for return to service after it has undergone maintenance, preventive maintenance, rebuilding, or modification, except as provided in the following:

- (a) A pilot authorised by the Authority may return his aircraft to service after performing authorised preventive maintenance.
- (b) A licensed aviation maintenance engineer 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 2.5 of these Flight Standards Directives.

- (c) An AMO may approve aircraft and aeronautical products for return to service as provided in the specifications approved by the Authority.
- (d) An AOC holder may approve aircraft and aeronautical products for return to service as specified by the Authority.

#### **5.6.5 PERSONS AUTHORISED TO PERFORM INSPECTIONS**

No person, other than the Authority, may perform the inspections required by Part 8, Section 8.2.1.7 of these Flight Standards Directives, for aircraft and aeronautical products prior to or after it has undergone maintenance, preventive maintenance, rebuilding, or modification except as provided in the following:

- (a) An aviation maintenance engineer may conduct the required inspections of aircraft and aeronautical products for which he is rated and current.
- (b) An AMO may perform the required inspections of aircraft and aeronautical products as provided in the specifications approved by the Authority.
- (c) An AOC holder may perform the required inspections of aircraft and aeronautical products in accordance with specifications issued by the Authority.

#### **5.6.6 PERFORMANCE RULES: MAINTENANCE**

- (1) Each person performing maintenance, preventive maintenance, or modification on an aeronautical product shall use the methods, techniques, and practices prescribed in-
  - (a) The current manufacturer's maintenance manual or instructions for Continued Airworthiness prepared by its manufacturer; and
  - (b) 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.
- (2) 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.
- (3) Each person performing maintenance, preventive maintenance, or modification 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.
- (4) The methods, techniques, and practices contained in an AOC holder's maintenance control manual and continuous maintenance program, as approved

by the Authority, shall constitute an acceptable means of compliance with the requirements of this subsection.

### 5.6.7 PERFORMANCE RULES: INSPECTIONS

- (1) **General.** Each person performing an inspection required by the Authority shall-
  - (a) Perform the inspection so as to determine whether the aircraft, or portion(s) thereof under inspection, meets all applicable airworthiness requirements; and
  - (b) If there is an inspection program required or accepted for the specific aircraft being inspected, perform the inspection in accordance with the instructions and procedures set forth in the inspection program
- (2) **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-
  - (a) The drive shafts or similar systems;
  - (b) The main rotor transmission gear box for obvious defects;
  - (c) The main rotor and centre section (or the equivalent area); and
  - (d) The auxiliary rotor on helicopters.
- (3) **Annual and 100-hour inspections**
  - (a) Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection. The checklist shall be one provided by the manufacturer or designer of the equipment being inspected. The checklist shall include the scope and detail of the items prescribed by the Authority.

*Implementing Standard: See IS:5.6.7 for components to be included in an annual or 100-hour inspection.*

- (b) Each person approving a reciprocating-engine-powered 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.
- (c) Each person approving a turbine-engine-powered 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.

#### **5.6.8 PERFORMANCE RULES: AIRWORTHINESS LIMITATIONS**

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.

### **5.7. MAINTENANCE RECORDS AND ENTRIES**

#### **5.7.1 CONTENT, FORM AND DISPOSITION OF MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING AND MODIFICATION RECORDS.**

- (1) Each person who maintains, performs preventive maintenance, rebuilds, or modifies an aircraft or aeronautical product shall, when the work is performed satisfactorily, make an entry in the maintenance record of that equipment as follows-
  - (a) A description (or reference to data acceptable to the Authority) of work performed;
  - (b) Completion date of the work performed; and
  - (c) Name, signature, certificate number and kind of licence held by the person approving the work.

*Note: The signature constitutes the approval for return to service only for the work performed.*

- (2) The person performing the work shall enter records of major repairs and major modifications, and dispose of that form in the manner prescribed by the Authority.

*Implementing Standard See IS 5.7.1 for the maintenance form requirements and a sample major repair and modification form.*

- (3) A person working under supervision of an Aircraft Maintenance Engineer may not perform any inspection required in Part 8 or any inspection performed after a major repair or modification.

#### **5.7.2 RECORDS OF OVERHAUL AND REBUILDING**

- (1) No person may describe in any required maintenance entry or form, an aeronautical product as being overhauled unless-
  - (a) It has been disassembled, cleaned, inspected as permitted, repaired as necessary, and reassembled using methods, techniques, and practices acceptable to the Authority; and

- (b) 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 may 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, required 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.

*Note:* As identified in Part 5.6.3, only a manufacturer holding an AMO can rebuild an Aeronautical product.

### **5.7.3 APPROVAL FOR RETURN TO SERVICE AFTER MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING OR MODIFICATION**

- (1) No person may approve for return to service any aeronautical product that has undergone maintenance, preventive maintenance, rebuilding, or modification unless-
- (a) The appropriate maintenance record entry has been made; and
  - (b) The repair or modification form authorised by or furnished by the Authority has been executed in a manner prescribed by the Authority.
- (2) If a repair or modification results in any change in the aircraft operating limitations or flight data contained in the approved aircraft manual, those operating limitations or flight data as appropriately revised and set forth as prescribed.

*Implementing Standard: See IS : 5.7.1 for the repair or modification form requirements*

### **5.7.4 CONTENT, FORM, AND DISPOSITION OF RECORDS FOR INSPECTIONS**

- (1) **Maintenance 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-
- (a) Type of inspection and a brief description of the extent of the inspection;
  - (b) Date of the inspection and aircraft total time in service;
  - (c) Signature, the licence number, and kind of license held by the person approving or disapproving for return to service the aeronautical product;

- (d) If the aircraft is found to be airworthy and approved for return to service, the following or a similarly worded statement **“I certify that this aircraft has been inspected in accordance with (insert type) inspection and was determined to be in airworthy condition.”**;
  - (e) If the aircraft 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 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
  - (f) 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.
- (2) **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 or operator a signed and dated list of those discrepancies.
  - (3) The person performing the work shall enter records of major repairs and major modifications, and keep them for a period of ninety (90) days after the unit to which they refer has been permanently withdrawn from service and the records in 5.7.1 for a minimum period of one year after the signing of the maintenance release.
  - (4) The lessee of a helicopter shall comply with the requirements of 5.7.1(1) and (2) as applicable, while the helicopter is leased.

## 5.8 DAMAGE TO AIRCRAFT

### 5.8.1 APPLICABILITY

- (1) This Subpart describes the procedural requirements for resumption of flights after damage to aircraft.
- (2) 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.
- (3) If the damage is sustained or ascertained when the aircraft is on 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 judgement referred to in (2) of this subsection.

- (4) 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 without fare-paying passengers to an aerodrome at which it can be restored to an airworthy condition, and the contracting state that has originally in accordance with (3) of this subsection prevented the aircraft from resuming flights shall permit such flight.
- (5) 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.

### **5.8.2 TEMPORARY LOSS OF AIRWORTHINESS**

Any failure to maintain an aircraft in an airworthy condition as defined by the appropriate airworthiness requirements shall render the aircraft ineligible for operation until the aircraft is restored to an airworthy condition.

### **5.8.3 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 appropriate airworthiness requirement, and additional instructions and information for the safe operation of the aircraft.

# **GHANA CIVIL AVIATION (FLIGHT STANDARDS) DIRECTIVES**

## **PART 5 – IMPLEMENTING STANDARDS**

*For ease of reference, the number assigned to each implementing standard corresponds to its associated regulation. For example, IS 5.5.2 would reflect a standard required in subsection 5.5.2*

**NOVEMBER 2018**





**IS: 5.1.2(1) MAJOR MODIFICATIONS (DEFINITION)**

- (1) **Airframe Major Modifications.** Major modifications include modifications to the listed aircraft parts, or the listed types of modifications (when not included in the applicable aircraft specifications):
- (a) Wings.
  - (b) Tail surfaces.
  - (c) Fuselage.
  - (d) Engine mounts.
  - (e) Control system.
  - (f) Landing gear.
  - (g) Hull or floats.
  - (h) Elements of an airframe including spars, ribs, fitting, shock absorbers, bracing, cowlings, fairings, and balance weights.
  - (i) Hydraulic and electrical actuating system of components.
  - (j) Rotor blades.
  - (k) 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.
  - (l) Changes to the basic design of the fuel, oil, cooling, heating, cabin pressurization, electrical, hydraulic, de-icing, or exhaust systems.
  - (m) Changes to the wing or to fixed or movable control surfaces which affect flutter and vibration characteristics.
- (2) **Powerplant Major Modifications.** Major powerplant modifications, even when not listed in the applicable engine specifications, include:
- (a) Conversion of an aircraft engine from one approved model to another, involving any changes in compression ratio, propeller reduction gear, impeller gear ratios or the substitution of major engine parts which requires extensive rework and testing of the engine.
  - (b) 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.
  - (c) Installation of an accessory which is not approved for the engine.

- (d) Removal of accessories that are listed as required equipment on the aircraft or engine specification.
  - (e) Installation of structural parts other than the type of parts approved for the installation.
  - (f) Conversions of any sort for the purpose of using fuel of a rating or grade other than that listed in the engine specifications.
- (3) **Propeller Major Modifications.** Major propeller modifications, when not authorised in the applicable propeller specifications, include:
- (a) Changes in blade design.
  - (b) Changes in hub design.
  - (c) Changes in the governor or control design.
  - (d) Installation of propeller governor or feathering system.
  - (e) Installation of propeller de-icing system.
  - (f) Installation of parts not approved for the propeller.
- (4) **Appliance Major Modifications.** Modifications of the basic design not made in accordance with recommendations of the appliance manufacturer or in accordance with applicable Airworthiness Directive are appliance major modifications. In addition, changes in the basic design of radio communication and navigation equipment approved under type certification or other authorisation that have an effect on frequency stability, noise level, sensitivity, selectivity, distortion, spurious radiation, Automatic 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 major modifications.
- (5) **Minor Modification:** By definition, a minor modification is a design change that has a negligible, or no appreciable, effect on the mass, balance, structural strength, reliability, operational characteristics or other characteristics affecting the airworthiness of the aeronautical product. The accomplishment of minor modifications normally involves use of standard or generally accepted practices.

#### IS: 5.1.2(2) MAJOR REPAIRS (DEFINITION)

- (1) **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 of their replacement, when replacement is by fabrication such as riveting or welding, are airframe major repairs:
- (a) Box beams.
  - (b) Monocoque or semimonocoque wings or control surfaces.

- (c) Wing stringers or chord members.
- (d) Spars.
- (e) Spar flanges.
- (f) Members of truss type beams.
- (g) Thin sheet webs of beams.
- (h) Keel and chine members of boat hulls or floats.
- (i) Corrugated sheet compression members which act as flange material of wings or tail surfaces.
- (j) Wing main ribs and compression members.
- (k) Wing or tail surface brace struts.
- (l) Engine mounts.
- (m) Fuselage longerons.
- (n) Members of the side truss, horizontal truss, or bulkheads.
- (o) Main seat support braces and brackets.
- (p) Landing gear brace struts.
- (q) Axles.
- (r) Wheels.
- (s) Parts of the control system such as control columns, pedals, shafts, brackets, or horns.
- (t) Repairs involving the substitution of material.
- (u) The repair of damaged areas in metal or plywood stressed covering exceeding six inches in any direction.
- (v) The repair of portions of skin sheets by making additional seams.
- (w) The splicing of skin sheets.
- (x) 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.
- (y) Repair of fabric covering involving an area greater than that required to repair two adjacent ribs.
- (z) Replacement of fabric on fabric covered parts such as wings, fuselages, stabilizers, and control surfaces.

- (aa) Repairing, including rebottoming, of removable or integral fuel tanks and oil tanks.
- (2) **Powerplant Major Repairs.** Repairs of the following parts of an engine and repairs of the following types, are powerplant major repairs:
- (a) Separation or disassembly of a crankcase or crankshaft of a reciprocating engine equipped with an integral supercharger.
  - (b) Separation or disassembly of a crankcase or crankshaft of a reciprocating engine equipped with other than spur-type propeller reduction gearing.
  - (c) Special repairs to structural engine parts by welding, plating, metalising, or other methods.
- (3) **Propeller Major Repairs.** Repairs of the following types to a propeller are propeller major repairs:
- (a) Any repairs to or straightening of steel blades.
  - (b) Repairing or machining of steel hubs.
  - (c) Shortening of blades.
  - (d) Retipping of wood propellers.
  - (e) Replacement of outer laminations on fixed pitch wood propellers.
  - (f) Repairing elongated bolt holes in the hub of fixed pitch wood propellers.
  - (g) Inlay work on wood blades.
  - (h) Repairs to composition blades.
  - (i) Replacement of tip fabric.
  - (j) Replacement of plastic covering.
  - (k) Repair of propeller governors.
  - (l) Overhaul of controllable pitch propellers.
  - (m) Repairs to deep dents, cuts, scars, nicks, etc. and straightening of aluminium blades.
  - (n) The repair or replacement of internal elements of blades.
- (4) **Appliance Major Repairs.** Repairs of the following types to appliances are appliance major repairs:

- (a) Calibration and repair of instruments.
  - (b) Calibration of avionics or computer equipment.
  - (c) Rewinding the field coil of an electrical accessory.
  - (d) Complete disassembly of complex hydraulic power valves.
  - (e) Overhaul of pressure type carburetors, and pressure type fuel, oil, and hydraulic pumps.
- (5) **Minor Repair:** A minor repair involves any repair that does not fall under the major repair category, meaning the repair has a negligible effect on the airworthiness of the affected aeronautical product. The accomplishment of minor repairs normally involves use of standard or generally accepted practices.

**IS: 5.1.2(3) PREVENTIVE MAINTENANCE (DEFINITION)**

**Preventive Maintenance.** Preventive maintenance is limited to the following work, provided it does not involve complex assembly operations.

- (a) Removal and installation of landing gear wheel assembly.
- (b) Replacing elastic shock absorber cords on landing gear.
- (c) Servicing landing gear shock struts by adding oil, air, or both.
- (d) Servicing landing gear wheel bearings, such as cleaning and greasing.
- (e) Replacing defective safety wiring or cotter keys.
- (f) Lubrication not requiring disassembly other than removal of nonstructural items such as cover plates, cowlings, and fairings.
- (g) Making simple fabric patches not requiring rib stitching or the removal of structural parts or control surfaces.
- (h) Replenishing hydraulic fluid in the hydraulic reservoir.
- (i) 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.
- (j) Applying preservative or protective material to component 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.
- (k) 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.

- (l) Making small simple repairs to fairings, nonstructural cover plates, cowlings, and small patches and reinforcements not changing the contour so as to interfere with proper airflow.
- (m) Replacing side windows where that work does not interfere with the structure of any operating system such as controls, electrical equipment, etc.
- (n) Replacing safety belts.
- (o) Replacing seats or seat parts with replacement parts approved for the aircraft, not involving disassembly of any primary structure or operating system.
- (p) Troubleshooting and repairing broken circuits in landing light wiring circuits.
- (q) Replacing bulbs, reflectors, and lenses of position and landing lights.
- (r) Replacing wheels and skis where no weight and balance computation is involved.
- (s) Replacing any cowling not requiring removal of the propeller or disconnection of flight controls.
- (t) Replacing or cleaning spark plugs and setting of spark plug gap clearance.
- (u) Replacing any hose connection except hydraulic connections.
- (v) Replacing prefabricated fuel lines.
- (w) Cleaning fuel and oil strainers.
- (x) Replacing and servicing batteries.
- (y) Replacement or adjustment of nonstructural fasteners incidental to operations.
- (z) 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.

**IS: 5.4.8 SAMPLE AIRWORTHINESS CERTIFICATE**



REPUBLIC OF GHANA

GHANA CIVIL AVIATION AUTHORITY

**CERTIFICATE OF AIRWORTHINESS**

<b>C.A. FORM 13</b>	<b>CERTIFICATE NO:</b>	
1. Nationality and Registration Mark  <b>9G-</b>	2. Manufacturer & Manufacturer's Designation of Aircraft	3. Aircraft Serial No:
4. <b>CATEGORIES:</b>		
5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December, 1944, the Civil Aviation Act 678 of 2004, GCAA Amendment Act 906 of 2016 and the Civil Aviation Directives, 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.  Date of issue: .....  <div style="text-align: right;">                     By authority of the Director General                      Ghana Civil Aviation Authority                 </div>		
6. This Certificate is valid From: ..... to .....		
No entries or endorsements may be made on this Certificate except in the manner and by the persons authorised for the purpose by the Director General of the Ghana Civil Aviation Authority.  If this Certificate is lost, the Director General of the Ghana Civil Aviation Authority should be informed at once.  Any person who finds this Certificate should forward it immediately to: The Director General, Ghana Civil Aviation Authority, Private Mail Bag, Kotoka International Airport, Accra, Ghana.		



**IS: 5.6.7 PERFORMANCE RULES: 100 HOUR INSPECTIONS**

- (1) Each person performing an annual or 100-hours inspection shall, before that inspection, thoroughly clean the aircraft and aircraft engine and remove or open all necessary inspection plates, access doors, fairings, and cowlings.
- (2) Each person performing an annual or 100-hour inspection shall inspect, where applicable, the following components-
  - (a) Fuselage and Hull group –
    - (i) Fabric and skin – for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.
    - (ii) Systems and components – for improper installation, apparent defects, and unsatisfactory operation.
    - (iii) The cabin and cockpit group.
    - (iv) Generally – for uncleanliness and loose equipment that might foul the controls.
    - (v) Seats and safety belts – for poor condition and apparent defects.
    - (vi) Windows and windshields – for deterioration and breakage.
    - (vii) Instruments – for poor condition, mounting, marking, and (where practicable) for improper operation.
    - (viii) Flight and engine controls - for improper installation and improper operation.
    - (ix) Batteries – for improper installation and improper charge.
    - (x) All systems – for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.
  - (b) Engine and nacelle group-
    - (i) Engine section – for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.
    - (ii) Studs and nuts – for improper torquing and obvious defects.
    - (iii) 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.
    - (iv) Engine mount – for cracks, looseness of mounting, and looseness of engine to mount.

- (v) Flexible vibration dampness - for poor condition and deterioration.
  - (vi) Engine controls – for defects, improper travel, and improper safetying.
  - (vii) Lines, hoses, and clamps – for leaks, improper condition, and looseness.
  - (viii) Exhaust stacks – for cracks, defects and improper attachment.
  - (ix) Accessories – for apparent defects in security of mounting.
  - (x) All systems – for improper installation, poor general condition, defects, and insecure attachment.
  - (xi) Cowling – for cracks and defects.
- (c) Landing gear group -
- (i) All units – for poor condition and insecurity of attachment.
  - (ii) Shock absorbing devices – for improper oleo fluid level.
  - (iii) Linkage, trusses, and members – for undue or excessive wear, fatigue and distortion.
  - (iv) Retracting and locking mechanism – for improper operation.
  - (v) Hydraulic lines – for leakage.
  - (vi) Electrical system – for chafing and improper operation of switches.
  - (vii) Wheels – for cracks, defects, and condition of bearings.
  - (viii) Tires – for wear and cuts.
  - (ix) Brakes – for improper adjustment.
  - (x) Floats and skis – for insecure attachment and obvious or apparent defects.
- (d) Wing and centre section assembly for-
- (i) Poor general condition.
  - (ii) Fabric or skin deterioration.
  - (iii) Distortion.
  - (iv) Evidence of failure.

- (v) Insecurity of attachment.
- (e) Complete empennage assembly for-
  - (i) Poor general assembly.
  - (ii) Fabric or skin deterioration.
  - (iii) Distortion.
  - (iv) Evidence of failure.
  - (v) Insecure attachment.
  - (vi) Improper component installation.
  - (vii) Improper component operation.
- (f) Propeller group-
  - (i) Propeller assembly - for cracks, nicks, bends, and oil leakage.
  - (ii) Bolts-for improper torquing and lack of safety.
  - (iii) Anti-icing devices – for improper operations and obvious defects.
  - (iv) Control mechanisms – for improper operation, insecure mounting, and restricted travel.
- (g) Avionics or instrument group-
  - (i) Avionics or instrument equipment – for improper installation and insecure mounting.
  - (ii) Wiring and conduits – for improper routine, insecure mounting and obvious defects.
  - (iii) Bonding and shielding – for improper installation and poor condition.
  - (iv) Antenna including trailing antenna – for poor condition, insecure mounting, and improper operation.
- (h) Electronic or electrical group-
  - (i) Wiring and conduits – for improper routing, insecure mounting, and obvious defects.
  - (ii) Bonding and shielding - for improper installation and poor condition.
- (3) Each installed miscellaneous item that is not otherwise covered by this listing and or has instructions for continued airworthiness - for improper installation and improper operation.

**IS: 5.7.1 RECORDING OF MAJOR REPAIRS AND MAJOR MODIFICATIONS**

- (1) Each person performing a major repair or major modification shall:
  - (a) Execute the appropriate form prescribed by the Authority at least in duplicate;
  - (b) Give a signed copy of that form to the aircraft owner or operator; and
  - (c) 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.
  
- (2) In place of the requirements of paragraph (1), major repairs made in accordance with a manual or specifications acceptable to the Authority, an AMO may:
  - (a) Use the customer’s work order upon which the repair is recorded;
  - (b) 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;
  - (c) Give the aircraft owner a maintenance release signed by an authorised representative of the AMO and incorporating the following information-
    - (i) If an aircraft, the make, model, serial number, nationality and registration marks, and location of the repaired area;
    - (ii) If an aeronautical product give the manufacturer’s name, name of the part, model, and serial numbers (if any);
    - (iii) If an aeronautical product, give the manufacturer’s name, part, model and serial numbers (if any): and
  - (d) Include the following or a similarly worded statement:

*The aeronautical product identified above was repaired, overhauled and inspected in accordance with currently effective, applicable instructions of the State of Design and regulatory requirements of the Authority, and is approved for return to service.*

*Pertinent details of the repair are on file at this maintenance organization.*

Order No. \_\_\_\_\_ Date \_\_\_\_\_

Signed \_\_\_\_\_

*(Signature of authorised representative)*

\_\_\_\_\_

*(Facility Name) (AMO Certificate Number)*

\_\_\_\_\_

*(Address)*

\_\_\_\_\_

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

<b>MAJOR REPAIR AND MODIFICATION (Airframe, Powerplant, Propeller, or Appliance)</b>					Ghana	
					For CAA Use Only	
					Office identification	
INSTRUCTIONS: Print or type all entries. See Directive 5.7.1 for instructions and disposition of this form.						
1. Aircraft	Make			Model		
	Serial Number			Nationality and Registration Mark		
2. Owner	Name (As shown on registration Certificate)			Address (As shown on registration certificate)		
3. For Authority Use Only						
4. Unit Identification				5. Type		
Unit	Make	Model	Serial Number	Repair	Modification	
Airframe	——(As described in item 1 above) ——					
Powerplant						
Propeller						
Appliance	Type					
	Manufactur e					
6. Conformity Statement						
A. Organisation Name and Address		B. Kind of License/Organisation			C. Certificate/License Number	
		<input type="checkbox"/> Licensed (AMT) A <input type="checkbox"/> P <input type="checkbox"/> or A/P <input type="checkbox"/>			(For an AMO include the appropriate ratings issued for the major repair or modification)	
		<input type="checkbox"/> Approved Maintenance Organisation				
		<input type="checkbox"/> Manufacturer				
D. I certify that the repair and/or modification 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 Directives and that the information furnished herein is true and correct to the best of my knowledge.						
Date			Signature of Authorised Individual			
7. Approval for Return To Service						
Pursuant to the authority given persons specified below, the unit(s) identified in item 4 was inspected in the manner prescribed by the Director of the Civil Aviation Authority and is <b>APPROVED</b> <input type="checkbox"/> <b>REJECTED</b> <input type="checkbox"/>						
By	<input type="checkbox"/> CAA Inspector		<input type="checkbox"/> Inspection Authorisation		Other (Specify)	
	<input type="checkbox"/> Maintenance Organisation		<input type="checkbox"/> Other			
Date of Approval or Rejection			Certificate or Designation Number		Signature or Authorised Individual	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. A modification must be compatible with all previous modifications 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)