

THE REPUBLIC OF SUDAN SUDAN CIVIL AVIATION AUTHORITY



SUDAN CIVIL AVIATION REGULATIONS

SUCAR PART 8

Subpart 1

AIRWORTHINESS OF AIRCRAFT

Second Edition
Khartoum
June 2017

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THE REPUBLIC OF SUDAN

SUDAN CIVIL AVIATION AUTHORITY



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SUCAR PART 8

AIRWORTHINESS OF AIRCRAFT

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Khartoum
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THE REPUBLIC OF SUDAN
Sudan Civil Aviation Regulations
SUCAR Part 8
Subpart 1
Airworthiness of Aircraft

SUCAR Part 8, Subpart 1 – *Airworthiness of Aircraft*, First Edition – July 2017 has been promulgated pursuant to Article 33 of the Sudan Civil Aviation Act, 2010 and issued by the Board of Directors of Civil Aviation. The SUCAR has been published under my Authority on the advice of the Board of Directors of Civil Aviation as is required by the Sudan Civil Aviation Act.

The Standards contained in this document including the associated Advisory Circulars, Directives, Operational Policies, Orders, or Sudan Civil Aviation Safety Publications, fully comply with the Standards and Recommended Practices (SARPs) contained in Annex 8 – *Airworthiness of Aircraft* to the *Convention on International Civil Aviation*, signed in Chicago on 7 December 1944 (Chicago Convention) and related documents and guidance material issued by ICAO.

SUCAR Part 8, Subpart 1 – *Airworthiness of Aircraft* contains comprehensive requirements for ensuring the airworthiness of aircraft registered in Sudan and for determining the Standards associated with the appropriateness of issuing the certificate of Airworthiness (CofA) for aircraft registered in Sudan. SUCAR Part 8 and all its Subparts as promulgated supersede any other regulation which may have been issued with respect to the airworthiness of aircraft.

The Director General of the SCAA has been delegated to issue, revise and amend Advisory Circulars, Directives, Operational Policies, Orders, relevant Procedures Manuals, Guidance Material, etc., related to and referred in this SUCAR. The Director General of the SCAA shall inform the Board of Directors of Civil Aviation, in writing, on the Advisory Circulars, Directives, Operational Policies, Orders, Procedures Manuals, Guidance Material, etc., that he may have issued, revised or amended under this authority and are enforceable under the Act.

SUCAR Part 8 and its Subparts form part of the overall regulatory framework of civil aviation in Sudan and are supported by other related SUCARs such as Part 2 – *Rules of the Air*, Part 6 – *Operations of Aircraft*, Part 7 – *Nationality of Aircraft and Registration Mark*, Part 16 – *Environmental Protection* and Part 19 – *Safety Management*, just to mention few of the SUCARs closely related to the SUCAR.

General (P.S.C)


AWAD MOHAMMED AHMED IBN OUF
Minister



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SUDAN CIVIL AVIATION REGULATIONS
SUCAR PART 8 – SUBPART 1
Airworthiness of Aircraft

FOREWORD

1. Legal background

- 1.1 Pursuant to Article 33 of the Civil Aviation Act, 2010 regarding the empowerment of the Board of Directors of Civil Aviation to issue and amend Sudan Civil Aviation Regulations (SUCAR) for acceptance and consent by the Competent Minister, SUCARs are issued to ensure full compliance with the Annexes to the Convention on International Civil Aviation, signed in Chicago on 7 December 1944 (Chicago Convention) to which the Republic of Sudan is a Party. The Chicago Convention, through its Annexes, establishes the minimum Standards and Recommended Practices (SARPs) to ensure the safety and security of global air navigation activities and environmental protection. Sudan Civil Aviation Regulations provide an appropriate and comprehensive framework for the definition and implementation of common technical requirements and administrative procedures in the field of civil aviation. Where not covered by the specific SUCARs, ICAO Annex SARPs as well as the technical information in related technical publications and guidance material form a complimentary regulatory material for implementation in Sudan, as may be applicable, and thus are considered an enforceable regulatory requirements in the areas that they address but are not addressed by the relevant SUCAR, Operational Directive or Safety Notice. Such Standards and Recommended Practices considered essential for implementation should be included in the relevant SUCAR as soon as practicable and in any case during the next amendment of the SUCAR.
- 1.2 An aircraft, other than an aircraft registered in the Republic of Sudan, shall not fly over or land in the territories of the Republic of Sudan except under an authorization granted by the Sudan Civil Aviation Authority (SCAA) on behalf of the Government of the Republic of Sudan.
- 1.3 An aircraft other than an aircraft registered in the Republic of Sudan shall not take on-board or discharge any passengers or cargo at any location within the territories of the Republic of Sudan, being passengers or cargo carried or to be carried for hire or reward, without the permission of the SCAA granted for the aircraft in accordance with any conditions and limitations to which such permission may be subjected.
- 1.4 An aircraft shall not fly over or land in the territory of the Republic of Sudan unless it is registered in:
- i. The Republic of Sudan; or
 - ii. An ICAO Contracting State; or
 - iii. Any other State where there is an agreement/arrangement between the Republic of Sudan and that State making provisions for over-flight or landing in the territory of the Republic of Sudan.



- 1.5 In accordance with the provisions of SUCAR Part 7 – *Aircraft Nationality and Registration*, an aircraft registered in the Republic of Sudan shall comply with the Sudan Civil Aviation Regulations.
- 1.6 An Aircraft, registered outside the Republic of Sudan shall comply with the Sudan Civil Aviation Regulations while operating to/from or within the territories of the Republic of Sudan wherever is applicable.
- 1.7 An aircraft registered in the Republic of Sudan should comply with the regulations of other States where it may be operating or overflying.
- 1.8 Sudan SCAA accepts the codes of the Type Certification Authority of the State of Manufacturer and/or Design, for the purpose of issuing or Revalidation of Airworthiness Certificates, Airworthiness Directives (ADs), Minimum Equipment List (MEL), and all other related issues in that respect. The Sudan Civil Aviation Authority may impose additional requirements.
- 1.9 Any difference that may exist between SUCAR requirements and corresponding ICAO Annex SARPs shall be reported to ICAO in line with the requirements of Article 38 of the Convention. Significant differences shall be published in the National Aeronautical Information Publications (**AIP**). The procedure for amending the SUCARs and filing of differences with ICAO are contained in the “Rule Making Manual, Third Edition, 2014 and is summarized in paragraph 4 below.
- 1.10 An effort has been made for SUCAR requirements to be fully compliant with corresponding ICAO Annex provisions; however, where an aviation activity for which a SUCAR regulation has not been promulgated is undertaken in the Sudan, the relevant Annex provisions shall be applicable until it is addressed in an amendment of the SUCAR (see also paragraph 1.1 above).
- 1.11 Provisions promulgated in the SUCARs shall be applicable within six months after the date that they have been signed by the Competent Minister and published following promulgation by the Board of Directors.
- 2. Layout of the SUCAR document**
- 2.1 Sudan civil aviation regulations (SUCARs)**
- 2.1.1 The Republic of Sudan has promulgated or in the process of promulgating operating regulations that would fully comply with corresponding Standards contained in the Annexes to the *Convention on International Civil Aviation*. List of SUCARs promulgated in Sudan is contained in the Table below. The list shall be amended periodically to reflect the status of SUCAR implementation.
- 2.1.3 SUCARs, as may be applicable, are supported by various Guidance Materials, Procedures Manuals and Inspectors Handbooks designed to enable the SCAA to effectively and efficiently meet its safety oversight obligations as well as to provide the Inspectorate staff with a complete set of regulatory and supporting materials.
- 2.1.5 Together, the SUCARs and relevant guidance materials, procedures and handbooks form the required by the SCAA to regulate and supervise civil aviation activity in Sudan and of Sudanese registered aircraft operating outside of Sudan.
- 2.1.6 List of Sudan Civil Aviation Regulations is presented in the Table below which shall be amended as required from time-to-time to ensure its currency.



No.	SUCAR Part No.	Title/Name	Edition/Year
1.	SUCAR Part 1	Personnel Licensing	2 nd Edition/2017
2.	SUCAR Part 2	Rules of the Air	2 nd Edition/2017
3.	SUCAR Part 3	Meteorological Services	2 nd Edition/2017
4.	SUCAR Part 4	Aeronautical Charts	1 st Edition/2017
5.	SUCAR Part 5	Units of Measurement	Under Development
6.	SUCAR Part 6 Subpart I	Operations of Aircraft – Commercial Air Transport Aeroplanes	3 rd Edition/2017
7.	SUCAR Part 6 Subpart II	Operations of Aircraft – General Aviation	1 st Edition/2017
8.	SUCAR Part 6 Subpart III	Operations of Aircraft – Commercial Helicopter Operations	1 st Edition/2017
9.	SUCAR Part 6 Subpart IV	Aerial Work	1 st Edition/2017
10.	SUCAR Part 6 Subpart V	Ground Handling Agents	Under Development
11.	SUCAR Part 7	Aircraft Nationality and Registration Marks	1 st Edition/2017
12.	SUCAR Part 8 Subpart I	Airworthiness of Aircraft	1 st Edition/2017
13.	SUCAR Part 8 Subpart M	Airworthiness of Aircraft – Continuing Airworthiness Requirements	1 st Edition/2017
14.	SUCAR Part 8 Subpart 21	Airworthiness of Aircraft – Certification of Products and Appliances	1 st Edition/2017
15.	SUCAR Part 8 Subpart 66	Airworthiness of Aircraft – Aircraft Maintenance Licences	1 st Edition/2017
16.	SUCAR Part 8 Subpart 145	Airworthiness of Aircraft – Maintenance Organization Approvals	1 st Edition/2017
17.	SUCAR Part 8 Subpart 147	Airworthiness of Aircraft – Approved Maintenance Training Organizations	1 st Edition/2017
18.	SUCAR Part 9	Facilitation	1 st Edition/2017
19.	SUCAR Part 10	Aeronautical Telecommunications	1 st Edition/2017
20.	SUCAR Part 11	Air Traffic Services	1 st Edition/2017
21.	SUCAR Part 12	Search and Rescue	1 st Edition/2017
22.	SUCAR Part 13	Aircraft Accident and Incident Investigations	1 st Edition/2011
23.	SUCAR Part 14 Subpart I	Aerodromes – Aerodrome Design and Operations	2 nd Edition/2016
24.	SUCAR Part 14 Subpart II	Heliports	1 st Edition/2016
25.	SUCAR Part 15	Aeronautical Information Services	2 nd Edition/2017
26.	SUCAR Part 16 Subpart I	Environmental Protection – Aircraft Noise	Under Development
27.	SUCAR Part 16 Subpart II	Environmental Protection – Aircraft Engine Emissions	Under Development
28.	SUCAR Part 17	Aviation Security	2 nd Edition/2017
29.	SUCAR Part 18	The Safe Transport of Dangerous Goods	2 nd Edition/2017
30.	SUCAR Part 19	Aviation Safety Management	2 nd Edition/2017



2.1.7 Each Part of SUCAR, but not necessarily all, is composed of:

- a) An introduction;
- b) Text;
- c) Definitions;
- d) Notes;
- e) Tables and figures;
- f) Appendices; and
- g) Attachments.

3. Rules of construction

3.1 In the Parts of these Regulations, unless the context requires otherwise:

- a) Words importing the singular include the plural
- b) Words importing the plural include the singular, and
- c) Words importing the masculine gender include the feminine.
- d) "Shall" is used in an imperative sense.
- e) "May/should" is used in a permissive sense to state authority or permission to do the act prescribed, and the words "no person may...." or "a person may not" means that no person is required, authorized or permitted to do the act prescribed,.
- f) The word "Includes" means includes but is not limited to.
- g) The word "Show" and its derivatives in these regulations have the exact intent as shown in the dictionary.

4. Amendment Rationale and Procedures

The existing Sudan Civil Aviation Regulations will from time-to-time be amended to reflect the latest updates of ICAO Standards and Recommended Practices (SARPs); it will also be amended to reflect the latest up-to-date aviation safety related matters detected by the Civil Aviation Authority, the aviation industry service providers or operators, and individuals and authorization holders; amendment may also be generated to ensure safety standardization and to accommodate new initiatives or technologies. Detailed information on the rule making process are contained in the "Rule Making Manual", Fourth Edition, 2014 and a brief information on the amendment is presented below:

- a) When the **SCAA** receives an amendment to any of the current ICAO Annexes, the same will be routed by the Office of the Director General of Civil Aviation to the Safety Policy and Standards Directorate (**SPSD**) which in turn will provide a copy to the concerned Directorate for their study and comments within a specified period of time (normally 15 days) and route the same back to the **SPSD** for final study and processing.
- b) When any of the different **SCAA** Directorates requires a change to the applicable SUCAR Parts, it will send a letter stating the required change along with its justified reasons for such change. The request shall be studied, discussed and as may be applicable processed by the **SPSD** in accordance to the rule making procedures contained in the "Rule Making Manual."
- c) Any of the above mentioned change requests would then be prepared in draft form and sent to the concerned Directorates for further study and comments



- within a specific period of time (this period can be short or long depending on the size and complexity of the changes or amendments required).
- d) All suggested changes will be drafted in the form of Notices of Proposed Amendments (**NOPA**) and addressed to all concerned entities including industry representatives for comments prior to adoption.
 - e) Any differences between the new regulations and ICAO SARPs will be reported and recorded as differences to ICAO and reflected in the **AIP**, as applicable.
 - f) Entry into force time frame for any new regulations will be the responsibility of the **SPSD**. The **SPSD** will also be responsible for coordinating the identification of differences from corresponding ICAO Annexes in coordination with the concerned Directorates.
 - g) The Office of the Director General is responsible for filing differences with ICAO, in the case that they exist, as soon as new regulations or amendments there to have been promulgated.
 - h) All concerned parties will be given a copy of the new amendment and will be requested to update their copy of the regulations including their list of effective pages.
 - i) Approved amendments or corrigenda of SUCAR or part(s) thereof will be disseminated to the industry through hardcopies (news release circulars directives and other) and softcopies (online or database, Internet address, CD-ROM and other).
 - j) It is the responsibility of all concerned parties to keep their copy of the regulations up-to-date.
 - k) The SCAA may not release regulations prior to the formal consent by the Competent Minister as determined in the Civil Aviation Act 2010 or by the Director General of the Sudan Civil Aviation Authority on a written delegation by the Competent Minister.

5. **Article 83bis**

Sudan has ratified Article 83bis of Convention on International Civil Aviation respecting the delegation of responsibilities in instances where aeroplane are leased, chartered, or interchanged in particular without crew, with any ICAO member State that had ratified this article.

6. **Requirements**

Applicants for an Aircraft Certificate of Airworthiness (CofA) shall submit a Certificate of Airworthiness application to the SCAA (Aviation Safety Department).

Prior to submitting their application to the SCAA, applicants should also familiarize themselves with airworthiness of aircraft regulatory requirements contained in this SUCAR and other related SUCARs including SUCAR Part 6, as applicable ensure that they fully meet the requirements related to airworthiness and maintenance of aircraft contained in those SUCARs.



7. Status of SUCAR components

SUCAR is normally made up of the following component parts, not all of which however are found in every SUCAR; they have the status indicated:

Standard

Any specification or physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which the holder of an Air Operator Certificate issued by the Sudan DGCA will conform to.

Appendices and Attachments

Comprising material grouped separately for convenience but forming part of the Standards.

Definition

Of terms used in the standards which are not self-explanatory in that they do have accepted dictionary meanings. A definition does not have independent status but is an essential part of each Standard in which the term is used, since a change in the meaning of the term would affect the specification.

Table and Figures

Which add to or illustrate a Standard which are referred to therein, form part of the associated Standard and have the same status.

References

This Sub Part is based on ICAO Standards and Recommended Practices and its guidance materials.

8. Applicability

- 8.1 This SUCAR applies to aircraft owners registered in Sudan and air operators required to meet the requirements for ensuring the continuing airworthiness of aircraft in their service in line with requirements contained in this SUCAR, other related SUCARs and SUCAR Part 6 – Operation of Aircraft.



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Sudan Civil Aviation Regulations
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SUDAN CIVIL AVIATION REGULATIONS

SUCAR PART 8

Airworthiness of Aircraft

CHAPTER 1

GENERAL RULES AND DEFINITIONS

1.1 General Rules

- 1.1.1 Sudan does not have a design and manufacturing codes and adopts the applicable airworthiness codes of the State of Design (mainly that of the European Union (EU-EASA) and the United States of America (USA-FAA) taking into consideration all the differences filed to ICAO by those States.
- 1.1.2 The continuing airworthiness of Sudanese registered aircraft shall be determined by the Directorate General of Civil Aviation (DGCA) in relation to the appropriate airworthiness requirements in force for that aircraft at the time of inspection, and to meet the standard practice 4.2.1.1(b) of ICAO Annex 8 "Airworthiness of Aircraft" Part II "Procedures for Certification and Continuing Airworthiness" Section 4 "Continuing Airworthiness of Aircraft".
- 1.1.3 In addition to the requirements stated in this SUCAR the SCAA adopts the requirements of the type certification authority (specifically EASA and FAA) for continued airworthiness of aircraft during its service life.
- 1.1.4 The term aircraft includes airframe, power plants, propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.
- 1.1.5 No person may operate a product to which an Airworthiness Directive applies except in accordance with the requirements of that Airworthiness Directive.
- 1.1.6 Operators of Sudanese-registered aircraft should have in their company operation procedures manual a section that controls the receiving, distributing, implementing and recording of mandatory continuing airworthiness information.

1.2. DEFINITIONS

When the following terms are used in this SUCAR for the Airworthiness of Aircraft, they have the following meanings:

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.

Approved. Accepted by SCAA as suitable for a particular purpose.

Category A. With respect to helicopters, means a multi-engine helicopter designed with engine and system isolation features specified in ICAO Annex 8 Part IVb 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). Any engine whose failure gives the most adverse effect on the aircraft characteristics relative to the case under consideration.

Note: *On some aircraft, there may be more than one equally critical engine. In this case, the expression “the critical engine” means one of those critical engines.*

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.

Engine. A unit used or intended to be used for aircraft propulsion. It consists of at least those components and equipment necessary for functioning and control, but excludes the propeller/rotors (if applicable).

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.

Fireproof. The capability to withstand the application of heat by a flame for a period of 15 minutes.

Note: *The characteristics of an acceptable flame can be found in ISO 2685.*

Fire resistant. The capability to withstand the application of heat by a flame for a period of 5 minutes.

Note.: *The characteristics of an acceptable flame can be found in ISO 2685.*

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, including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

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.

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.

Power plant. 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.

Rendering (a Certificate of Airworthiness) valid. The action taken by the SCAA, 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 to a SCAA issued Certificate of Airworthiness.

Repair. The restoration of an aeronautical product to an airworthy condition to ensure that the aircraft continues to comply with the design aspects of the appropriate airworthiness

requirements used for the issuance of the Type Certificate for the respective aircraft type, after it has been damaged or subjected to wear.

Safety management system. A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

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 means molar mass:
 $M_0 = 28.964420 \times 10^{-3} \text{ kg mol}^{-1}$
 - 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:
 $\rho_0 = 1.2250 \text{ kg m}^{-3}$
 - 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 kilometer)
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

Note1: The standard geopotential metre has the value $9.80665 \text{ m}^2 \text{ s}^{-2}$.

Note2: See Doc 7488 for the relationship between the variables and for tables giving the corresponding values of temperature, pressure, density and geopotential.

Note3: 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).*

State Safety Programme. An integrated set of regulations and activities aimed at improving safety.

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.

Note: *In some contracting States, a document equivalent to a type certificate may be issued for an engine or propeller type.*

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.



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SUDAN CIVIL AVIATION REGULATIONS
SUCAR PART 8
Airworthiness of Aircraft

CHAPTER 2
PROCEDURES FOR CERTIFICATION AND PRODUCTION

2.1 TYPE CERTIFICATION

Note 1: Sudan is not a State of Design of any aircraft or aircraft components. However, Sudan may approve organizations for design and/or manufacturing of aircraft or aircraft components as per Standards contained in this SUCAR or any other Subpart of this SUCAR that may be promulgated separately.

Note 2: Sudan has not developed design and manufacturing codes. Sudan accepts the codes of the Type Certification Authority of the State of Manufacturer and/or State of Design, for the purpose of manufacturing aircraft or components, issuing or validating Airworthiness Certificate, Airworthiness Directives (ADs), Minimum Equipment List (MEL), and all other related issues in that respect. Additional requirements may be imposed by SCAA.

2.1.1 Applicability

The Standards contained in this Chapter shall be applicable to all aircraft of types for which the application for certification was submitted to Sudan on or after 13 June 1960, except that the provisions of paragraph 2.1.4 of this SUCAR shall be applicable to an aircraft type for which an application for Type Certificate is submitted to the State of Design on or after 2 March 2004.

2.1.2 Design aspects of the appropriate airworthiness requirements

2.1.2.1 The design aspects of the appropriate airworthiness requirements, used by Sudan for type certification in respect of a class of aircraft or for any change to such type certification, shall be such that compliance with them will ensure compliance with the Standards of Part II of ICAO Annex 8 and, where applicable, with the Standards of Parts III, IV, V, VI or VII of ICAO Annex 8.

2.1.2.2 The design shall not have any features or characteristics that render it unsafe under the anticipated operating conditions.

2.1.2.3 Where the design features of a particular aircraft render any of the design aspects of the appropriate airworthiness requirements or the Standards contained in Parts III, IV, V, VI or VII of ICAO Annex 8 inappropriate, the Sudan shall apply appropriate requirements that will give at least an equivalent level of safety.

2.1.2.4 Where the design features of a particular aircraft render any of the design aspects of the appropriate airworthiness requirements or the Standards in Parts III, IV, V, VI or VII inadequate, additional requirements that are considered by the Contracting State to give at least an equivalent level of safety shall be applied.

Note: *An Airworthiness Manual (Doc 9760) containing guidance material has been published by ICAO.*

2.1.2.5 The approved design of an aircraft under Parts IIIB, IVB and V of ICAO Annex 8 shall use extinguishing agents that are not listed in the 1987 Montreal Protocol on Substances that

Deplete the Ozone Layer as it appears in the Eighth Edition of the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer*, Annex A, Group II, in the aircraft fire suppression or extinguishing systems in the lavatories, engines and auxiliary power unit.

Note: *Information concerning extinguishing agents is contained in the UNEP Halons Technical Options Committee.*

2.1.3 *Proof of compliance with the appropriate airworthiness requirements*

2.1.3.1 For a type certificate to be accepted by the SCAA, the applicant shall present an approved design consisting of such drawings, specifications, reports and documentary evidence as are necessary to define the design of the aircraft and to show compliance with the design aspects of the appropriate airworthiness requirements.

Note: *The approval of the design is facilitated, in some States, by approving the design organization.*

2.1.3.2 The aircraft shall be subjected to such inspections and ground and flight tests as are deemed necessary by the SCAA to show compliance with the design aspects of the appropriate airworthiness requirements.

2.1.3.3 In addition to determining compliance with the design aspects of the appropriate airworthiness requirements for an aircraft, the SCAA shall take whatever other steps it deems necessary to ensure that the design approval is withheld if the aircraft is known or suspected to have dangerous features not specifically guarded against by those requirements.

2.1.3.4 Sudan in issuing an approval for the design of a modification, of a repair or of a replacement part shall do so on the basis of satisfactory evidence that the aircraft is in compliance with the airworthiness requirements used for the issuance of the Type Certificate, its amendments or later requirements as determined by Sudan and/or the State of Design.

Note 1: *While a repair may be completed and shown to be in compliance with the set of requirements that had been selected for the original type certification of the aircraft, some repairs may need to be shown to comply with the latest applicable certification requirements. In such cases, States may issue a repair design approval against the latest set of requirements for that aircraft type.*

Note 2: *The approval of the design of a modification to an aircraft is signified, in some States, by the issuance of a supplemental Type Certificate or amended Type Certificate.*

2.1.4 *Type certificate*

2.1.4.1 A Type Certificate is issued by the State of Design, upon receipt of satisfactory evidence that the aircraft type is in compliance with the design aspects of the appropriate airworthiness requirements to define the design and to signify approval of the design of the aircraft type. Sudan accepts a Type certificate issued by the State of Design provided it is in compliance as stated in this paragraph.

Note: *Some Contracting States also issue Type Certificates for engines and propellers.*

2.1.4.2 Should Sudan issue a Type Certificate for an aircraft type, it shall do so on the basis of satisfactory evidence that the aircraft type is in compliance with the design aspects of the

appropriate airworthiness requirements and in line with Standards that may be issued in this respect.

2.2 PRODUCTION

Note: *Sudan does not currently have an aircraft design bureau or organizations that manufacture aircraft or aircraft components. However, in the event that such organizations are established in Sudan it shall develop and promulgate regulatory requirements relating to appropriate certification of products, parts and appliances. Organizations may be approved under a new subpart of SUCAR Part 8 to manufacture aircraft and aircraft components under licence and agreement with a design organization approved by another contracting State in compliance with the airworthiness code of that contracting State and relevant requirements contained in this SUCAR.*

2.2.1 Applicability

The Standards of this chapter shall be applicable to the production of all aircraft and aircraft parts in the event that Sudan becomes a State of Manufacture.

2.2.2 Aircraft production

Sudan shall ensure that each aircraft, including aircraft parts manufactured by sub-contractors and/or suppliers, in the Sudan is airworthy.

2.2.3 Aircraft parts production

Sudan shall ensure that the production of aircraft parts manufactured under the design approval referred to in paragraph 2.1.3.4 above, are airworthy.

2.2.4 Production approval

2.2.4.1 When approving production of aircraft or aircraft parts, the SCAA shall:

- a) examine the supporting data and inspect the production facilities and processes so as to determine that the manufacturing organization is in compliance with the appropriate production requirements; and
- b) ensure that the manufacturing organization has established and can maintain a quality system or a production inspection system such as to guarantee that each aircraft or aircraft part produced by the organization or by sub-contractors and/or suppliers is airworthy.

Note 1: *Normally, the oversight of production is facilitated by approving the manufacturing organization.*

Note 2: *Where the State of Manufacture is a State other than Sudan (where the aircraft parts are produced), there may be an agreement or arrangement acceptable to Sudan and the State of Manufacture to support the oversight responsibilities of the State of Manufacture over the organizations manufacturing the aircraft parts in Sudan.*

2.2.4.2 The manufacturing organization shall hold, for each aircraft or aircraft part concerned, a design approval as referred to in paragraph 2.1.3 above, or the right of access under an agreement or arrangement to the approved design data relevant for production purposes.

2.2.4.3 Records shall be maintained such that the origin of the aircraft and of the aircraft parts, and their identification with the approved design and productions can be established.

Note: *The origin of aircraft and of the aircraft parts refers to the manufacturer, the date of manufacture, the serial number or other information that can be tracked to its production record.*

2.2.4.4 Where the State of Manufacture is other than the State of Design, there shall be an agreement or arrangement acceptable to both States and Sudan as the aircraft parts manufacturing State to:

- a) ensure that the manufacturing organization has the right of access to the approved design data relevant for production purposes; and
- b) address the responsibilities of each State with regard to design, manufacture and continued airworthiness of the aircraft and parts that may be produced in Sudan.

SUDAN CIVIL AVIATION REGULATIONS
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Airworthiness of Aircraft

CHAPTER 3
CERTIFICATE OF AIRWORTHINESS

Note: *The Certificate of Airworthiness as used in these Standards is the Certificate of Airworthiness referred to in Article 31 of the Convention on International Civil Aviation.*

3.1 SCOPE AND APPLICABILITY

This Chapter establishes the procedural requirements for issuing Certificates of Airworthiness. The requirements of this Chapter are applicable in respect of all aircraft registered or will be registered in Sudan.

3.2 ELIGIBILITY

Any natural or legal person under whose name an aircraft is registered or will be registered in SUDAN, or its representative, shall be eligible applicant for a certificate of airworthiness for that aircraft under this Chapter.

3.3 APPLICATION

An application for a Certificate of Airworthiness shall be made in a form and manner established by the SCAA/ Aviation Safety Department/Airworthiness Directorate.

3.4 ISSUANCE OF A CERTIFICATE OF AIRWORTHINESS

3.4.1 A Certificate of Airworthiness shall be issued by SCAA on the basis of;

a) *New aircraft:*

satisfactory evidence that the aircraft conforms to the design aspects of the appropriate airworthiness requirements by the State of Type Certification, and any additional requirements made by the SCAA.

b) *Used aircraft:*

i. evidence is presented to the SCAA that the aircraft conforms to a type-design approved under a type-certificate or a supplemental type-certificate and to applicable airworthiness directives; and

ii. the aircraft has been inspected and found airworthy in accordance with the SCAA requirements for maintenance, preventive maintenance and alteration of aircraft and aircraft engines, and found airworthy by:

1) the Manufacturer,

2) the holder of a Maintenance Organization Certificate (Approved Maintenance Organization as described in SUCAR Part 8, Sub part 145); and

3) persons/organizations authorized by the SCAA.

c) The SCAA finds, after inspection, that the aircraft conforms to the approved type design, and is in a condition for safe operation.

3.4.2 The SCAA shall not 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 unless it has satisfactory evidence that the aircraft complies with the applicable airworthiness requirements.

3.4.3 When an aircraft possessing a valid Certificate of Airworthiness issued by an ICAO contracting State is entered on the Sudanese Aircraft Register, the SCAA when issuing another Certificate of Airworthiness or rendering the original certificate valid shall, prior to the issuance of the Certificate of Airworthiness, ensure that item 3.4.1 is satisfied.

Note: *Some contracting States facilitate the transfer of aircraft onto the register of another State by the issue of an “Export Certificate of Airworthiness” or similarly titled document. While not valid for the purpose of flight, such a document provides confirmation by the exporting State of a recent satisfactory review of the airworthiness status of the aircraft. Guidance on the issue of an “Export Certificate of Airworthiness” is contained in the Airworthiness Manual (Doc 9760).*

3.5 STANDARD FORM OF CERTIFICATE OF AIRWORTHINESS

3.5.1 The Certificate of Airworthiness shall contain the information shown in Form No. AWD/003 (Appendix 1 – Certificate of Airworthiness).

3.5.2 The Certificates of Airworthiness is issued in the English language.

Note: *The Certificate of Airworthiness shall be carried on board every aircraft engaged in international air navigation.*

3.6 CLASSIFICATION

3.6.1 Standard Certificates of Airworthiness shall be issued to aircraft which conform to a type-certificate that has been issued by the civil aviation authority of the state of design/manufacture.

3.6.2 Special Certificates of Airworthiness shall be issued to aircraft which are not covered under paragraph 3.6.1, but are in compliance with specific certification specifications and are capable of safe flight under defined conditions.

3.7 AMENDMENT OR MODIFICATION

A Certificate of Airworthiness shall only be amended or modified by the SCAA. An application for the amendment or modification shall be made in a form and manner established by the SCAA.

3.8 TRANSFERABILITY

A Certificate of Airworthiness shall be transferred together with the aircraft in the case of a change of ownership of the aircraft provided the aircraft remains on the Sudanese register.

3.9 DURATION AND CONTINUED VALIDITY

3.9.1 A Certificate of Airworthiness shall be issued for the duration specified by the SCAA provided that the period shall not exceed a period of 12 months from the date of issue thereof the new date of validity shall be stated on the certificate itself. A Certificate of Airworthiness shall remain valid subject to:

- a) compliance with the applicable type-design and continuing airworthiness requirements; and
- b) The aircraft remains on the Sudanese register; and
- c) The type certificate under which it is issued remains valid; and
- d) The Certificate of Airworthiness has not been surrendered, revoked or expired

3.9.2 The holder of the Certificate of Airworthiness shall provide access to the aircraft for inspection by SCAA Inspectors upon request by the SCAA.

3.9.3 Upon surrender or revocation, the certificate shall be returned to the SCAA.

3.10 AIRCRAFT IDENTIFICATION

Each applicant for a Certificate of Airworthiness under this SUCAR shall demonstrate that the aircraft and aircraft engines are identified in accordance with requirements contained in SUCAR Part 7.

3.11 SPECIAL FLIGHT PERMIT

A Special Flight Permit shall be issued for an aircraft that may not currently meet applicable airworthiness requirements but is capable of safe flight, for the following purposes:

- a) Flying the aircraft to a base where repairs, alterations, or maintenance are to be performed, or to a point of storage; or
- b) Delivering or exporting the aircraft; or
- c) Evacuating aircraft from areas of impending danger.

3.12 ISSUE of SPECIAL FLIGHT PERMITS

3.12.1 An applicant for a Special Flight Permit shall submit a statement in a form and manner established by the SCAA, indicating:

- a) The purpose of the flight;
- b) The proposed itinerary;
- c) The crew required to operate the aircraft and its equipment, e.g. Pilot, Co-pilot, Navigator, etc.
- d) The deviations, if any, from the applicable airworthiness requirements.
- e) Any restriction the applicant considers necessary for safe operation of the aircraft.
- f) Any other information considered by the SCAA for the purpose of prescribing operating limitations.

3.12.2 The SCAA may carry out, or require the applicant to carry out, appropriate inspections or tests necessary for safety.

3.13 EXPORT AIRWORTHINESS APPROVALS

3.13.1 General

3.13.1.1. Definitions

- a) A Class I Product is a complete aircraft, aircraft engine, APU or propeller.
- b) A Class II Product is a major component of a Class I Product (e.g. wings, fuselages, empennage assemblies, landing gears, power transmissions, control surfaces, etc.).
- c) A Class III Product is any part or component which is not a Class I or Class II Product and includes standard parts.
- d) The words “newly overhauled” when used to describe a product means that the product has not been operated or placed in service, except for functional testing, since having been overhauled, inspected, and approved for return-to-service in accordance with the applicable SCAA requirements.

3.13.1.2 *Scope and Applicability*

- a) Procedural requirements for the issue of Export Airworthiness Approvals, and
- b) Rules governing the holders of those approvals.

3.13.2 *Eligibility*

The SCAA will only accept an application for an Export Airworthiness Approval from a person or organization that is the owner of a used product.

3.13.3 *Limitations*

- 3.13.3.1 Export Airworthiness of a complete aircraft is issued in the form of an Export Certificate of Airworthiness. Such a certificate does not authorize the operation of aircraft.
- 3.13.3.2 Export Airworthiness Approval of products other than complete aircraft is issued in the form of Export Airworthiness Release Documents.

3.13.4 *Application*

- a) An application for Export Airworthiness Approval shall be made in a form and manner established by the SCAA and is submitted to the SCAA Aviation Safety Department.
- b) Each application for an Export Airworthiness Approval for an entire aircraft must include:
 - i. Evidence of compliance with applicable airworthiness directives. A suitable notation must be made when such directives are not complied with; and
 - ii. Historical records such as aircraft and engine log books, repair and alteration forms, etc; and
 - iii. A statement as to the date when title passed or is expected to pass to a foreign purchaser.

3.13.5 *Issuance of Export Airworthiness Approvals*

- 3.13.5.1 An applicant is entitled to an Export Airworthiness Approval for a Class I Product if that applicant shows that he possesses a valid Certificate of Airworthiness issued by the SCAA.
- 3.13.5.2 An applicant is entitled to an Export Airworthiness Release for a Class II or III Product if:
 - i. The applicant shows that parts are or were last installed on an aircraft possessing a valid Certificate of Airworthiness issued by the SCAA and have been approved for return-to- service.
 - ii. Parts have been newly overhauled in accordance with SCAA requirements.
 - iii. The applicant submits a description of the methods used, if any, for the preservation and packaging of such products to protect them against corrosion and damage while in storage. The description must also indicate the duration of the effectiveness of such methods.

3.13.6 *Duties and Responsibilities of Exporters*

For an exported product, the exporter shall:

- 3.13.6.1 Request cancellation of the Registration and Airworthiness Certificates, giving the date of transfer of title, and the name and address of the new owner.
- 3.13.6.2 Return the Registration and Airworthiness Certificates to the SCAA.
- 3.13.6.3 Submit to the SCAA a statement certifying that all Sudanese identification and registration numbers have been removed from the aircraft.

3.13.6.4 Forward to the civil aviation authority of the importing country all documents and information necessary for the proper operation of the product being exported

3.14 AIRCRAFT LIMITATIONS AND INFORMATION

Each aircraft shall be provided with a flight manual, placards and 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.

3.15 TEMPORARY LOSS OF AIRWORTHINESS

3.15.1 Upon evidence that any of the conditions stated above are not met, the SCAA shall suspend or revoke an airworthiness certificate.

3.15.2 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.

3.15.3 Upon issuance of the notice of suspension and revocation of a certificate of airworthiness, special certificate of airworthiness or special flight permit the SCAA shall state the reasons for the suspension or revocation and inform the holder of the certificate or permit on its right to appeal.

3.16 DAMAGE TO AIRCRAFT

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

3.16.2 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 is entitled to prevent the aircraft from resuming its flight on the condition that they shall advise SCAA immediately, communicating to it all details necessary to formulate the judgment referred to in 3.16

3.16.3 When SCAA 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 SCAA 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 will be restored to an airworthy condition, and the contracting State that had originally, in accordance with 3.16.2, prevented the aircraft from resuming flights shall permit such flight (Refer to Special flight permit. 3.11 & 3.12).

3.16.4 When SCAA 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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SUDAN CIVIL AVIATION REGULATIONS
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Airworthiness of Aircraft

CHAPTER 4
CONTINUING AIRWORTHINESS OF AIRCRAFT

4.1 APPLICABILITY

The requirements of this Chapter are applicable to all Sudanese registered aircraft. In addition to the requirements stated in this SUCAR, Sudan has also adopted the requirements of the type certification authority for continued airworthiness of aircraft during its service life.

4.2 DETERMINATION OF CONTINUING AIRWORTHINESS

4.2.1 The continuing airworthiness of Sudanese registered aircraft shall be determined by:

- a) The accomplishment of pre-flight inspections;
- b) The rectification to an officially recognized standard of any defect and damage affecting safe operation taking into account, for all large aircraft or aircraft used for commercial air transport, the minimum equipment list and configuration deviation list if applicable to the aircraft type;
- c) The accomplishment of all maintenance, in accordance with the approved aircraft maintenance programme;
- d) For all large aircraft or aircraft used for commercial air transport the analysis of the effectiveness of the approved maintenance programme;
- e) The accomplishment of any applicable:
 - i. airworthiness directive,
 - ii. operational directive with a continuing airworthiness impact,
 - iii. continued airworthiness requirement established by the SCAA,
 - iv. measures mandated by the SCAA in immediate reaction to a safety problem;
- f) The accomplishment of modifications and repairs in accordance with approved data;
- g) For non-mandatory modifications and/or inspections, for all large aircraft or aircraft used for commercial air transport the establishment of an embodiment policy;
- h) Maintenance check flights when necessary.

4.3 INFORMATION RELATED TO CONTINUING AIRWORTHINESS OF AIRCRAFT

4.3.1 When the SCAA first enters an aircraft of a particular type on its register and issues or validates a Certificate of Airworthiness in accordance with paragraph 3.4.2 of this SUCAR, it shall advise the State of Design that it has entered such an aircraft on its register.

4.3.2 The State of Design of an aircraft registered in Sudan shall transmit to the SCAA, in the form of Airworthiness Directives, any generally applicable information which it has found necessary for the continuing airworthiness of the aircraft and for the safe operation of the aircraft (hereinafter called mandatory continuing airworthiness information) including mandatory requirements for modification, parts replacement, aircraft inspection, amendment of operating limitation and procedures.

4.3.3 The SCAA shall, upon receipt of mandatory continuing airworthiness information shall directly adopt the mandatory information and thereafter promulgate the information to the applicable aircraft operators for implementation. SCAA may in some particular cases change the required level of compliance on any of the mandatory continuing airworthiness

- information based on the findings of the SCAA and on continuous surveillance of the aircraft.
- 4.3.4 The SCAA when entering on its registry an aircraft for which it has issued or validated a Certificate of Airworthiness in accordance with 3.4.2 of this SUCAR, shall ensure the transmission to the State of Design of all mandatory continuing airworthiness information which the SCAA has originated in respect of that aircraft.
- 4.3.5 The SCAA shall, in respect of aeroplanes of over 5700 kg and helicopters over 3180 kg maximum certificated take-off mass, transmit information on faults, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of the aircraft to the organization responsible for the type design of that aircraft.
- 4.3.6 The State of Design shall ensure that in respect of aeroplanes over 5700 kg and helicopters over 3175 kg maximum certificated take-off mass, there exists a system for:
- Receiving information submitted in accordance with 4.3.5;
 - Deciding if and when airworthiness action is needed;
 - Developing the necessary airworthiness actions; and
 - Promulgating the information on those actions including that required in 4.3.2.
- 4.3.7 The State of Design shall ensure that in respect of aeroplanes over 5700 kg maximum certificated take-off mass, there exists a continuing structural integrity programme to ensure the airworthiness of the aeroplane. The programme shall include specific information concerning corrosion prevention and control.
- 4.3.8 The SCAA has established, in respect of aeroplanes over 5700 kg and helicopters over 3175 kg maximum certificated take-off mass, procedures for reporting the type of service information required from operators and maintenance organizations, (refer to 4.10 Aircraft Continuing Airworthiness Monitoring).
- 4.3.9 Where the State of Manufacture of an aircraft is other than the State of Design, there shall be an agreement acceptable to both States to ensure that the manufacturing organization cooperates with the organization responsible for the type design in assessing information received on experience with operating the aircraft.
- 4.3.10 Organizations may be approved under SUCAR Part 8, subpart M (Continuing Airworthiness) to perform continuing airworthiness management functions in order to satisfy the requirements of SUCAR Part 6, subpart 1, Chapter 7 – Aeroplane Maintenance.

4.4 MAINTENANCE PROGRAMME

- 4.4.1 Every aircraft shall be maintained in accordance with a maintenance programme approved by the SCAA, which shall be periodically reviewed and amended accordingly.
- 4.4.2 The maintenance programme and any subsequent amendments shall be approved by the SCAA.
- 4.4.3 The maintenance programme must establish compliance with:
- Instructions for continuing airworthiness issued by type certificate and supplementary type certificate holders and any other SCAA approved organization that publishes such data, or
 - Instructions issued by the SCAA, if they differ from subparagraph (a) or in the absence of specific recommendations, or
 - Instructions defined by the owner or the operator and approved by the SCAA if they differ from subparagraphs (a) and (b).
- 4.4.4 The maintenance programme shall contain details, including frequency, of all maintenance to be carried out, including any specific tasks linked to specific operations. The programme must include a reliability programme when the maintenance programme is based:

- a) On Maintenance Steering Group logic, or;
 - b) Mainly on condition monitoring.
- 4.4.5 When the aircraft continuing airworthiness is managed by an Approved Continuing Airworthiness Management Organization the maintenance programme and its amendments may be approved through a maintenance programme procedure established by such organization (hereinafter called indirect approval) and approved through the organization's exposition document.

4.5 AIRWORTHINESS DIRECTIVES

Any applicable airworthiness directive must be carried out within the requirements of that airworthiness directive, unless otherwise specified by the SCAA.

4.6 DATA FOR MODIFICATIONS AND REPAIRS DAMAGE

Data for modification and repairs damage shall be assessed and modifications and repairs carried out using data approved by the SCAA or by an approved design organization, as appropriate or any standard accepted by the SCAA.

4.7 AIRCRAFT CONTINUING AIRWORTHINESS RECORD SYSTEM

- 4.7.1 At the completion of any maintenance, the associated certificate of release to service shall be entered in the aircraft continuing airworthiness records. Each entry shall be made as soon as practicable but in no event more than 30 days after the day of maintenance action.
- 4.7.2 The aircraft continuing airworthiness records shall consist of, as appropriate, an aircraft logbook, engine logbook(s) or engine module log cards, propeller logbook(s) and log cards, for any service life limited component and the operator's technical log.
- 4.7.3 The aircraft type and registration mark, the date, together with total flight time and/or flight cycles and/or landings, as appropriate, shall be entered in the aircraft logbooks.
- 4.7.4 The aircraft continuing airworthiness records shall contain the current:
- a) Status of airworthiness directives and measures mandated by the SCAA in immediate reaction to a safety problem;
 - b) Status of modifications and repairs;
 - c) Status of compliance with maintenance programme;
 - d) Status of service life limited components;
 - e) Weight and balance report;
 - f) List of deferred maintenance.
- 4.7.5 In addition to the authorized release document, the following information relevant to any component installed shall be entered in the appropriate engine or propeller logbook, engine module or service life limited component log card:
- a) identification of the component,
 - b) the type, serial number and registration of the aircraft to which the particular component has been fitted, along with the reference to the installation and removal of the component,
 - c) the particular component accumulated total flight time and/or flight cycles and/or landings and/or calendar time, as appropriate, and
 - d) the information contained in paragraph 4.7.4 is applicable to the component.
- 4.7.6 The person responsible for the management of continuing airworthiness tasks, shall control the records as detailed in this paragraph and present the records to the SCAA upon request.
- 4.7.7 All entries made in the aircraft continuing airworthiness records shall be clear and

accurate. When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry.

- 4.7.8 An owner or operator shall ensure that a system has been established to keep the following records for the periods specified:
- a) all detailed maintenance records in respect of the aircraft and any life-limited component fitted thereto, at least 24 months after the aircraft or component was permanently withdrawn from service,
 - b) the total time and flight cycles as appropriate, of the aircraft and all life-limited components, at least 12 months after the aircraft or component has been permanently withdrawn from service,
 - c) the time and flight cycles as appropriate, since last scheduled maintenance of the component subjected to a service life limit, at least until the component scheduled maintenance has been superseded by another scheduled maintenance of equivalent work scope and detail,
 - d) the current status of compliance with maintenance programme such that compliance with the approved aircraft maintenance programme can be established, at least until the aircraft or component scheduled maintenance has been superseded by other scheduled maintenance of equivalent work scope and detail,
 - e) the current status of airworthiness directives applicable to the aircraft and components, at least 12 months after the aircraft or component has been permanently withdrawn from service, and
 - f) details of current modifications and repairs to the aircraft, engine(s), propeller(s) and any other component vital to flight safety, at least 12 months after they have been permanently withdrawn from service.

4.8 OPERATOR'S TECHNICAL LOG SYSTEM

- 4.8.1 In the case of commercial air transport, in addition to the requirements of 4.7, an operator shall use an a technical log system containing the following information for each aircraft:
- a) information about each flight, necessary to ensure continued flight safety,
 - b) the current aircraft certificate of release to service,
 - c) the current maintenance statement giving the aircraft maintenance status of what scheduled and out of phase maintenance is next due except that the SCAA may agree to the maintenance statement being kept elsewhere,
 - d) All outstanding deferred defects rectifications that affect the operation of the aircraft, and
 - e) Any necessary guidance instructions on maintenance support arrangements.
- 4.8.2 The aircraft technical log system and any subsequent amendment shall be approved by the SCAA.
- 4.8.3 An operator shall ensure that the aircraft technical log is retained for 36 months after the date of the last entry.

4.9 TRANSFER OF AIRCRAFT CONTINUING AIRWORTHINESS RECORDS

- 4.9.1 The owner or operator shall ensure when an aircraft is permanently transferred from one owner or operator to another that the 4.7 continuing airworthiness records and, if applicable, 4.8 operator's technical log are also transferred.
- 4.9.2 The owner shall ensure, when he contracts the continuing airworthiness management tasks to an Approved Continuing Airworthiness Management Organization, that the continuing airworthiness records (refer to paragraph 4.7) are transferred to the Organization.

4.9.3 The time periods prescribed for the retention of records shall continue to apply to the new owner, operator or continuing airworthiness management organization.

4.10 AIRCRAFT CONTINUING AIRWORTHINESS MONITORING

4.10.1 The SCAA shall develop a survey programme to monitor the airworthiness status of the fleet of aircraft on its register.

4.10.2 The survey programme shall include sample product surveys of aircraft.

4.10.3 The programme shall be developed taking into account the number of aircraft on the register, local knowledge and past surveillance activities.

4.10.4 The product survey shall focus on a number of key risk airworthiness elements and identify any findings. Furthermore, the SCAA shall analyze each finding to determine its root cause.

4.10.5 All findings shall be confirmed in writing to the person or organization Accountable Manager.

4.10.6 The SCAA shall record all findings, closure actions and recommendations.

4.10.7 If during aircraft surveys evidence is found showing non-compliance to a requirement, the SCAA shall take the following actions:

- a) For level 1 findings, the SCAA shall require appropriate corrective action to be taken before further flight and immediate action shall be taken by the SCAA to revoke or suspend the airworthiness certificate.
- b) For level 2 findings, the corrective action required by the SCAA shall be appropriate to the nature of the finding.

4.10.8 If the root cause of the finding identifies a non-compliance with any CHAPTER or with another Part, the non-compliance shall be dealt with as prescribed by the relevant Part.

4.11 TEST/CHECK FLIGHTS

4.11.1 General

4.11.1.1 Test flights of aircraft provide a basis to establish compliance with certification requirements for new aircraft and changes to aircraft. Other flight testing referred to as check flights or in-flight surveys, can be carried out periodically on in-service aircraft as one of the processes to ensure that an aircraft continues to comply with the applicable airworthiness requirements. Additionally, maintenance check flights may be carried out following a maintenance activity on an aircraft to provide reassurance of performance or establish the correct functioning of a system that cannot be fully established during ground checks.

4.11.1.2 Owner-operators of aircraft are responsible for ensuring the continuing airworthiness of their aircraft. These responsibilities require owners, operators or their contracted maintenance management organizations to analyze the airworthiness status of the aircraft, including reported flight defects and performance issues. Each aircraft has to have a current Certificate of Airworthiness (CofA) in order to continue to operate. The renewal of the CofA shall be performed by the SCAA.

4.11.1.3 Sudanese registered aircraft need not be subject to the systematic programme of check flight, previously carried out at the time of C of A renewal or to an agreed flight test-sampling programme, Owners/operators who establish a need to carry out airworthiness check flights, as part of their own airworthiness assurance process, should ensure that their check flight schedules and procedures are developed in accordance with paragraph 4.1.1.3 (Scope of an Airworthiness Check Flight) and the current best practices. They may achieve this by consulting with the aircraft manufacturer or with SCAA Airworthiness for advice on content and safety

procedures. Nevertheless, the SCAA may require an airworthiness check flight in particular cases as they may find necessary.

4.11.2 *Types of Test / Check Flights*

4.11.2.1 *Test Flights*

Test flights are those “prescribed” flight test activities that provide a basis to establish compliance with certification requirements for new aircraft and changes to aircraft. These are conducted by production organization approved in accordance with SUCAR Part 8, subpart 21, in accordance with the terms of approval of the organization and the type certification requirements.

4.11.2.2 *Check Flights*

Check flights are required for fundamentally two different purposes, maintenance checks and continuing airworthiness management.

4.11.2.3 *Maintenance Check Flight (MCF)*

A MCF will often be required as part of a maintenance procedure to diagnose a fault or to ensure a fault has been rectified. This airborne test may be “prescribed” by a maintenance procedure, or it could be “elective” where an organization deems it good engineering practice.

4.11.2.4 *Airworthiness Check Flights (ACF)*

Sudanese registered aircraft need not be subject to the systematic programme of check flight, which were previously carried out at the time of C of A renewal or to an agreed flight test-sampling programme. Owners/operators who establish a need to carry out airworthiness check flights, as part of their own airworthiness assurance process, to ensure that the aircraft’s flight characteristics and its functioning in flight do not differ significantly from the normal characteristics for the type and to check the flight performance against the appropriate sections of the flight manual may do so. However, these flights should only be conducted in accordance with schedules that have been approved by either the SCAA or the manufacturer and, should be flown by a piloted accepted and briefed by the SCAA. Nevertheless, the SCAA may require an airworthiness check flight in particular cases as they may find necessary. ACFs may be conducted before or after a period of maintenance or at any convenient stage in an aircraft’s Airworthiness Certificate revalidation cycle.

4.11.3 *The Scope of the Airworthiness Check Flight*

4.11.3.1 *Aircraft Performance:* The aircraft’s performance must meet the scheduled performance contained within the Aircraft Flight Manual (AFM) or Operations Manual (OM). The performance should not have significantly degraded since the last check flight and any measured degradation should be accounted for.

4.11.3.2 *Handling Qualities:* The aircraft should handle/fly as intended. Stall characteristics should be benign or normal for the type. The aircraft should fly in balance and within designed trim conditions. In the case of rotorcraft, the low speed handling should be benign in addition to that of forward flight, etc.

4.11.3.3 *Systems:* All aircraft systems should be serviceable and fit for purpose or, if permissible, clearly labelled as inoperative. Systems used in the resolution of emergencies should also be operated, e.g. emergency lowering of undercarriage.

Autopilots and Flight Control Systems, particularly on helicopters, should be comprehensively tested to ensure they perform as intended with degraded modes assessed where possible.

4.11.4 *Check Flight Results*

4.11.4.1 After each check flight, the pilot who conducted the flight should complete the post-flight certificate, which lists all the defects found during the flight. This together with the completed Schedule comprises the Check Flight Report. Each defect should be classified according to its impact on safety. For required check flights, items requiring rectification before the issue, renewal or re-validation of the Certificate of Airworthiness (C of A) or Permit to Fly should be clearly specified. For those items that require re-checking in-flight following rectification (such as inadequate climb performance) it should, in addition, be clearly specified that further flight testing is required.

4.11.5 *Pilots conducting check flights*

4.11.5.1 To ensure that appropriate levels of safety are maintained, Check Flights should only be conducted by pilots who have satisfactory experience with the appropriate CFS, and have received adequate familiarization of check-flight techniques and safety precautions. For both required and elective check flights, it is necessary that the pilot concerned fully understands the significance and intent of the tests as well as the techniques used to minimize the risk associated with some tests.

4.11.6 *Requirement for test/check flights – Airworthiness check flights*

4.11.6.1 *C of A issue – New Aircraft*

As part of a production assurance programme, a Check Flight for an individual aircraft to determine conformity with the type certification standard will have been carried out by the manufacturer prior to the issue of their statement of conformity/export C of A. No check flight is subsequently required for C of A issue of new aircraft.

4.11.6.2 *Issue of a C of A – Used aircraft*

The responsibility for satisfying the airworthiness requirements rests with the Continuing Airworthiness Management Organisation (CAMO) or with the certifying staff of aircraft who is approved by the CAA to carry out airworthiness reviews and to make recommendations to the CAA.

4.11.6.3 *Issue of an export C of A*

The SCAA shall accept applications for the issue of an Export C of A for aircraft to be exported to other States. “Certificates of Airworthiness for Export” rules will apply with the exception that no check flight will be required unless specified by the importing State.

4.11.6.4 *Renewal of a C of A*

It is not mandatory for a check flight to be conducted for the renewal of an expiring C of A. The responsibility for deciding when a check flight is required falls upon the aircraft pilot-owner, maintainer or continuing airworthiness management organization (as applicable) and the acceptance of the SCAA of the data presented for C of A renewal.

4.11.6.5 *Maintenance check flights*

The maintenance check flights are part of the continuing airworthiness tasks necessary to ensure the serviceability of operational and emergency equipment. Maintenance organizations and licensed engineers are required to carry out maintenance and rectification in accordance with applicable current maintenance data. As part of this, the final function checks, measurements and assessment of operational adequacy will determine the acceptability of the work done and any associated performance. For some maintenance tasks, the manufacturer prescribes in the aircraft's Maintenance Manual the need for check flights to be carried out. For other tasks involving, for example, work carried out on a system or component the correct functioning of which is affected by flight dynamics, air loads, airflows, or low temperatures and pressures, the certifying engineer shall determine if a maintenance check flight is required to verify its operation. This decision will be influenced by the maintenance organization's quality system, which is required to ensure that all maintenance is properly performed.

4.11.7 *Check flight schedules (CFS)*

4.11.7.1 It is important that the content and conduct of check flight is standardized as far as possible to ensure that the appropriate checks are always made. In order to achieve the objectives of check flights outlined above, the check flight should be flown in accordance with a CFS agreed with the SCAA. These include climb performance checks and handling checks that combine checks on various flight characteristics.

4.11.7.2 If a check flight is planned on an aircraft for which the generic CFS is not applicable, the CFS must be agreed by the SCAA. Should an operator wish to develop an alternative schedule for required or elective check flights, this may be done provided that it incorporates all elements of the SCAA schedule and in particular, the check flight certificate. Any alternative schedule, when used for required check flights should have been reviewed and accepted by the Airworthiness Directorate; in seeking any such agreement, the operator should include details of arrangements for periodic review of their schedules.

4.12 **COMPASS SWING**

4.12.1 Direct reading magnetic compass swing shall be commended at every 12 months.

4.12.2 Other compasses functional checks shall be performed at intervals recommended by the manufactures.

SUDAN CIVIL AVIATION REGULATIONS**SUCAR PART 8*****Airworthiness of Aircraft*****CHAPTER 5****SAFETY MANAGEMENT**

- 5.1 Sudan has established and promulgated a National Safety Programme (NSP) that governs the development, establishment and maintenance of service provider's safety management, complemented by SUCAR Part 19 – Safety Management, containing standards for the establishment and maintenance of service provider's safety management system (SMS).
- 5.2 The National Safety Programme has been designed to achieve an acceptable level of safety performance (ALoSP) in civil aviation activities in Sudan.
- 5.3 Each service provider's acceptable level of safety performance shall be established by the SCAA as part of the acceptance of SMS of that particular organization or specific activity for which the establishment and maintenance of SMS is a requirement.
- 5.4 SUCAR Part 19 – Safety Management contains information on aviation service providers that are required to establish and maintain a SMS and the standards that should be met by service providers in order to ensure that their SMS is approved by the SCAA.
- 5.5 As a minimum, the service providers SMS shall:
- identifies safety hazards;
 - ensures the implementation of remedial action necessary to maintain agreed safety performance;
 - provides for continuous monitoring and regular assessment of the safety performance; and
 - aims at a continuous improvement of the overall performance safety management system.

Note: *ICAO Doc 9859 – Safety Management Manual (SMM) contains detailed guidance on the establishment and maintenance of a service provider's SMS and on defining acceptable level of safety performance.*

- 5.6 SUCAR Part 19 – Safety Management requires that a service provider's safety management system clearly define lines of safety accountability throughout the organization of the service provider, including a direct accountability for safety on the part of senior management.



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SUDAN CIVIL AVIATION REGULATIONS
SUCAR PART 8

Airworthiness of Aircraft

APPENDIX
CERTIFICATE OF AIRWORTHINESS

Form containing fields for: Nationality and registration marks, Manufacturer and manufacturer's designation of aircraft, Aircraft serial number, Categories and/or operation, and a statement of issuance.

- * Manufacturer's designation of aircraft should contain the aircraft type and model.
** The certification basis, i.e. certification code, with which the particular aircraft complies and/or its permitted operational category, e.g. commercial air transportation, aerial work or private.
*** This space shall be used either for periodic endorsement (giving date of expiry) or for a statement that the aircraft is being maintained under a system of continuous inspection.

**Sudan Civil Aviation Authority
SUCAR Part 8
June 2017**