

TECHNICAL GUIDANCE MATERIAL FOR TYPE ACCEPTANCE

SUBJECT: TECHNICAL GUIDANCE MATERIAL FOR TYPE ACCEPTANCE

EFFECTIVE DATE: 9 September 2021

APPLICABILITY

This TGM is applicable to the type acceptance of foreign Class I aeronautical products (aircraft, aircraft engines or propellers).

PURPOSE

This TGM gives guidance for applicants wishing to apply for the issue of, or the change to, a type acceptance certificate.

REQUIREMENTS

1. REFERENCE

It is intended that the following reference material be used in conjunction with this TGM:

- i. Part 21 of the South African Civil Aviation Regulations (CARs), Certification Procedures for Products and Parts
- ii. SA-CATS-21 of the South African Civil Aviation Technical Standards, Airworthiness Requirements
- iii. EASA CS-22 (previously JAR-22), Certification Specifications for Sailplanes and Powered Sailplanes
- iv. Part 23 of the Federal Aviation Regulations (FAR), Normal, Utility, Acrobatic and Commuter category Aeroplanes
- v. Part 25 of the FAR, Transport Category Aeroplanes
- vi. Part 27 of the FAR, Normal category Rotorcraft
- vii. Part 29 of the FAR, Transport Category Rotorcraft
- viii. Part 31 of the FAR, Manned Free Balloons
- ix. Part 33 of the FAR, Aircraft Engines
- x. Part 35 of the FAR, Propellers
- xi. Part 187 of the SACARs, Fees

2. TERMS AND ABBREVIATIONS

TERM	DEFINITION
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Aircraft	means any information necessary to ensure that an aircraft or aircraft component can be maintained in an airworthy condition
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Aircraft Type	means an aircraft as defined in the CARs, including its engines, propellers, rotor, components, parts, equipment, instruments, accessories and materials
Airworthiness Data	means all aircraft of the same basic design, including all modifications thereto, except those modifications which result in a change in handling or flight characteristics
Authority	means the National Airworthiness Authority of the certifying country or State of Design
State of Design	means the State which has authority over the organisation responsible for the type design of the Class I product
Class I Product	means a complete aircraft, aircraft engine or propeller, that has been type certificated in accordance with the appropriate airworthiness requirements and for which the necessary type certificate or equivalent have been issued
First of Type	means Class I products of which the type is to be placed on the South African Civil Aircraft Register for the first time.
Restricted Category	means a category for Special Purposes Operations
Standard Category	means a category for normal, transport, utility and commuter operations, including acrobatic, emergency medical service, flying training, semi-acrobatic, helicopter external-load and manned free balloon operations
State of Registry	means the State on whose register an aircraft is entered
Type Certificate Holder	means the legal entity to which the type certificate is issued
Type Acceptance Certificate	means acceptance of a design approval for Class I product issued in terms of the CARs

ABBREVIATION	DESCRIPTION
AD	Airworthiness Directive
AED	Airworthiness Engineering Department
AFM	Aircraft Flight Manual
CAR	Civil Aviation Regulations
C of A	Certificate of Airworthiness
DCA	Director of Civil Aviation
E: AE	Engineer: Airworthiness Engineering

E: ASO	Executive: Aviation Safety Operations
GA	General Aviation
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organisation
IPC	Illustrated Parts Catalogue
M: AE	Manager: Airworthiness Engineering
MM	Maintenance Manual
MRB	Maintenance Review Board
NAA	National Airworthiness Authority
OEM	Original Equipment Manufacturer
SACAR	South African Civil Aircraft Register
SA-CATS	South African Civil Aviation Technical Standards
TAC	Type Acceptance Certificate
TC	Type Certificate
TCDS	Type Certificate Data Sheet
VFR	Visual Flight Rules
VLA	Very Light Aircraft

3. BACKGROUND

3.1. Regulatory Requirements

3.1.1. ICAO Annex 8 deals with a contracting state's responsibility of ensuring the airworthiness of aeronautical products. The guidance document ICAO Doc 9760 further details the roles and responsibilities of the State of Registry regarding the acceptance (also termed validation) of type certified products to be imported and placed on the SACAR.

3.1.2. Any aircraft which is to be imported into the Republic of South Africa with the intention to obtain issuance of a Certificate of Airworthiness shall be accompanied by the Type Acceptance Certificate for the aircraft type. For the aircraft to be issued with a standard C of A, the aircraft type must have been issued with a standard TAC and that

the aircraft conforms with this TAC. The engine type installed on such aircraft model shall also be subject to the issuance of a TAC based on its Type Certificate.

3.1.3. The requirements for the issuance of a TAC may be found in CAR Part 21, Subpart 4. These regulations outline the requirements and minimum documentation required for the issuance of a TAC for a Class I product.

3.1.4. The SACAA conducts type acceptances in order to verify that the design of a product meets an airworthiness design standard appropriate and acceptable to the Director in term of CAR Part 21 and as prescribed by SA-CATS 21 and to obtain sufficient data on the product to enable effective safety oversight of the product with respect to design changes and continued airworthiness whilst on the SACAR.

3.1.5. Type Acceptance may require an on-site review in order to verify and validate the foreign type certification process, in line with CARs.

3.1.6. The following foreign type certified Class I products require that a TAC be issued by the SACAA prior to them being issued with a C of A:

3.1.6.1. Aircraft types which have been issued with a TC from the State of Design.

3.1.6.2. Engine types which have been issued with a TC from the State of Design.

3.1.6.3. Propeller types which have been issued with a TC from the State of Design.

3.2. General Exclusions

3.2.1. The following products do not require an application for the issuance of a TAC by the SACAA:

3.2.1.1. Class I products that have not been type certified in accordance with ICAO Annex 8 requirements are not eligible for issuance of Type Acceptance Certificate in South Africa.

3.3. Aircraft, Engines and Propellers Previously on the SACAR

3.3.1. Prior to the promulgation of the CARs of 1997, there was no requirement for the issuance of a TAC for Class I products in terms of Part 21. As such aircraft, engines and propellers that were placed on the SACAR prior to 26 September 1997, do not retrospectively require confirmation that a TAC was issued. However, aircraft types, engines and propellers intended to be placed on the register after 26 September 1997 must be type accepted.

3.3.2. It should be noted that the continued airworthiness support if the type is still required for the continued operation of these types in South Africa. Aircraft types that were on the SACAR prior to 26 September 1997, and subsequently removed from the register, require type acceptance prior to the aircraft being issued with a C of A.

4. TYPE ACCEPTANCE PROCESS

4.1. Application

4.1.1. The Airworthiness Engineering Department within the Airworthiness Division processes applications for the issuance of a TAC. Completed application forms, CA 21-04, should be addressed to the Manager: Airworthiness Engineering (M: AE), and may be submitted by:

4.1.1.1. Email: eng@caa.co.za

4.1.1.2. Post: South African Civil Aviation Authority
Manager: Airworthiness Engineering
Private Bag X73
Halfway House, 1685
Johannesburg, South Africa

4.1.1.3. Hand: Ikhaya Lokundiza
Building 16
Waterfall Park
Bekker Street
Midrand, 1685

4.1.2. The TC holder is required to complete and submit the Application for Type Acceptance (form CA 21-04). This form is available on the SACAA website. The TC holder also becomes the holder of the TAC issued by the SACAA. The Certifying Authority responsible for the issuance of the TC (State of Design) may also submit the application on behalf of the holder of the TC in accordance with the foreign Authority's protocol regarding validation of their certification functions.

4.1.3. The TAC is the acceptance of a foreign Authority's certification and hence the SACAA will need to have correspondence with the foreign certifying Authority.

4.1.4. It is the responsibility of the local agent or operator to liaise with and make the TC Holder aware of the SACAA requirements for an Application for Type Acceptance.

4.1.5. The foreign type certificate number and the exact models to be included in the type acceptance by the SACAA must be specified on the application form. These models must appear on the same TC and all data requirements for each model must be fulfilled for the issuance of the TAC. Models which appear on the TCDS, but have not been included on the application form, will not be type accepted by the SACAA.

4.1.6. The SACAA shall communicate with the TC holder through the designated Airworthiness Engineer (E: AE) tasked with leading the TAC project. The applicant will be advised in writing at the commencement of the project.

4.2. Determining the Level of Review

4.2.1. Following the submission of an application and review thereof, the SACAA determines the intentions of the local agent/operator. This will assist in determining the category of the TAC for which the product is eligible, establish the type of assessment to be conducted, level of involvement required and answer any queries the applicant may have related to the type acceptance process. It may also highlight any future approvals which may be required (e.g. a Part 148 Manufacturing Organisation Approval may be required for local production of a foreign aircraft).

4.2.2. Once the application has been accepted, communication with the applicant is initiated and a quotation based on the type and length of review will be forwarded to the applicant (in the case of an on-site review). The applicant will be expected to supply the necessary documentation and fulfil all requirements for the issuance of a TAC.

4.2.3. If an on-site review is required, it should be noted that all costs including those for travel, accommodation, insurance, subsistence allowance and SACAA hourly rates are for the account of the applicant/agent/operator.

4.2.4. Table 1 below is used to determine the type of review regarding the certification of a product required. In the first column, *category* describes the category that the aircraft is certified in. With respect to engines and propellers, the category corresponds to the category of aircraft on which an engine or propeller is installed.

4.2.5. The verification and validation of the requirements of CAR Part 21 will be conducted, and the level of review shall be in accordance with the following table:

4.2.6. Notwithstanding the requirements of Table 1, the following additional considerations may be applicable:

- 4.2.6.1. The product is a first of type on the SACAR
- 4.2.6.2. The NAA certification system is unfamiliar to the SACAA
- 4.2.6.3. The foreign product is to be embodied on a locally designed product
- 4.2.6.4. The product is of a novel or unusual design

Table 1: Product Categories and Requirements

CATEGORY	MODEL	TYPE OF REVIEW
Transport category aircraft & rotorcraft	Initial & Derivative	On-site review
	Engines & Propellers	On-site review for Initial Type and Desktop review for Derivatives
Commuter category	Initial & Derivative	On-site review
	Engines & Propellers	On-site review for Initial Type and Desktop review for Derivatives
Normal, Utility, Aerobatic Category aircraft & rotorcraft	Initial	On-site review
	Derivative	On-site review/Desktop review
	Engines & Propellers	On-site review for Initial Type and Desktop review for Derivatives
VLA category	Initial	On sites review
	Derivative	Desktop review
	Engines & Propellers	Desktop review
Gliders, power-assisted gliders and touring gliders	Initial	On-site review
	Derivative	Desktop review
	Engines & Propellers	Desktop review
Restricted category aircraft & rotorcraft	Initial & Derivative	On-site review for Initial Type and Desktop review for Derivatives
	Engines & Propellers	On-site review for Initial Type and Desktop review for Derivatives
Manned Free Balloons & Airships	Initial	Desktop review
	Derivative	Desktop review

CATEGORY	MODEL	TYPE OF REVIEW
	Engines & Propellers	Desktop review

5. TYPES OF REVIEW

5.1. Desktop Review

5.1.1. A desktop review is an investigation into the certification of the product in order to verify the process leading up to the certification and compliance to the certification basis of the product. A desktop review is conducted when there is no need for an on-site visit to the applicant's facilities or on-site review of the data.

5.1.2. A desktop review will generally only be conducted on those products in which the processes of the State of Design, the Certification Basis and product type are familiar to the SACAA. Examples include derivatives of already type accepted products without novel and complex designs, less complex propellers and engines.

5.1.3. The desktop review is conducted in accordance with the following basic aspects:

5.1.3.1. The TC (or equivalent document) issued by the State of Design must attest that the type design meets an appropriate airworthiness design standard as referenced by SA-CATS and is appropriate to the product. The TC must be considered valid by the State of Design, that is it has not been suspended, cancelled, or revoked.

5.1.3.2. The TCDS must contain adequate information regarding the type design to describe the product in detail, including the certification basis, technical characteristics, operational limitations, airworthiness limitations, operating instructions and service instructions. The TCDS (or sections of the TCDS for the model(s) applied for) will be reviewed and assessed for technical accuracy and possible areas requiring verification.

5.1.3.3. Class I products must meet the appropriate airworthiness design standards prescribed in SA-CATS 21. Design standards other than those prescribed may be accepted by the DCA, provided that those standards comply with ICAO Annex 8 and provide an equivalent level of safety to the prescribed standards. Military standards and standards not associated with or adopted by other NAAs, as well as standards that do not address the ICAO Annex 8 requirements, are not considered acceptable for the issuance of a South African TAC.

5.1.3.4. Deviations from the airworthiness design standard include special conditions, exemptions, equivalent levels of safety, deviations and elections to comply with a later standard. These deviations, including their substantiation, supporting data and foreign NAA decision for such deviations will be investigated and assessed for technical acceptability.

5.1.3.5. A compliance list should be submitted and will be assessed for completeness against the certification basis, and should record the following:

5.1.3.5.1. requirements of the airworthiness design standard and certification basis

5.1.3.5.2. the method of compliance (flight test, analysis, etc.)

5.1.3.5.3. reference to compliance reports (reference to a design, analysis or flight test report).

This list will be used to sample certain compliance reports and verify that compliance was shown to the requirement.

5.1.3.6. The following documents need to be submitted or access granted thereto via an online portal:

- 5.1.3.6.1. a copy of the AFM
- 5.1.3.6.2. a copy of the IPC
- 5.1.3.6.3. a copy of the MM and ICAs

These documents will be assessed for compliance to the requirements of the airworthiness design standard.

5.1.3.7. The service history of the aircraft will be assessed by reviewing the current service information issued by the manufacturer. ADs and SBs in particular are reviewed in order to ascertain what areas of the design have been identified as defective since the original certification and what design changes have been implemented.

5.2. On-site Review

5.2.1. The purpose of the on-site review is to conduct a certification validation and familiarization exercise in which the TC holder provides relevant product technical experts and specialists to provide technical presentations to the assigned SACAA team on constituent product systems.

5.2.2. An on-site review is a more detailed investigation of the certification of the product to verify the process leading up to certification. This would likely include further review of compliance with the certification basis through review of test reports, design analysis and technical presentations of the product certification process by the applicant.

5.2.3. The applicant (the TC holder) may propose dates for the on-site review by the SACAA during the application process. The length of this review will depend on the complexity of the product, which would also determine the size of the team conducting the review.

5.2.4. For aircraft on-site reviews, a minimum of two engineers are required to conduct the review for a minimum of 5 working days. The team will comprise of one mechanical/aeronautical and one avionics/electrical engineer. No travel for on-site reviews will commence unless full payment for invoices is received.

5.2.5. An on-site review will generally commence with an opening meeting with the SACAA, applicant and the Certifying Authority of the State of Design. The Certifying Authority will be expected to present the Certification Basis of the product, as well as the applicable regulations with regards to airworthiness.

5.2.6. The applicant is expected to provide technical presentations from relevant specialists to verify findings of compliance with the certification basis of the product. This exercise will generally consist of presentations and reviews covering the following subjects:

- 5.2.6.1. Product general overview
- 5.2.6.2. Detailed systems, structures, powerplant and avionics overviews
- 5.2.6.3. Certification documents including compliance checklists, certification review items, MRB reports, AFM, MM, system safety analysis reports,
- 5.2.6.4. Design and test reports demonstrating compliance
- 5.2.6.5. Continued airworthiness issues

5.2.7. The applicant is expected to provide relevant technical specialists to allow each member of the SACAA team to be accompanied by a specialist. These persons will be expected to present on the topics mentioned under 5.2.6, resolve any findings or deficiencies established during the certification assessment and answer questions based on the assessment.

5.2.8. At the end of the on-site review a closing meeting will be held with the applicant and Certifying Authority. A preliminary report regarding the activities undertaken and highlighting any findings and observations by the SACAA, will be presented and discussed at the final meeting. Findings should be addressed by the applicant and Certifying Authority.

5.2.9. The applicant will be contacted to advise them of the next stages of the acceptance process.

6. CONTINUED AIRWORTHINESS SUPPORT

6.1. In both types of review an applicant is expected to provide commitment in writing that future updates to manuals referred to 5.1.3.6 and information required for the continued airworthiness of the product to be type accepted are made available.

6.2. In the case of access being granted to an online portal, the engineer will have to verify access and ensure that all relevant information is available.

7. TRAINING

7.1. Where a new aircraft type is being introduced into service in South Africa which will require subsequent regulatory oversight by SACAA, then training will be required to be provided to SACAA staff who will be involved in approval of the aircraft for air transport operations. This would include:

7.1.1. a full type rating course for a flight operations inspector for each type

7.1.2. a general familiarisation course (typically 1-2 weeks) for a mechanical systems airworthiness inspector

7.1.3. an avionics familiarisation course for an avionics inspector for each type

7.2. Communication regarding the above courses will take place with the assigned inspectors from the respective departments.

8. ISSUANCE OR REFUSAL OF A TYPE ACCEPTANCE CERTIFICATE

8.1. The TAC will be issued once any findings raised during the type acceptance process have been resolved by the applicant and the SACAA is satisfied that all regulatory requirements have been fulfilled.

8.2. The SACAA follows an internal approval process that must be completed before the TAC is issued.

8.3. Should the SACAA determine that an applicant has not adequately met the regulatory or technical requirements for the issuance of a TAC, the DCA may refuse issuance of the TAC. The decision to refuse issuance of a TAC and the reasons for refusal will be communicated in writing to the applicant.

9. ADMINISTRATION OF A TYPE ACCEPTANCE CERTIFICATE

9.1. Amendment or Transfer of a TAC

9.1.1. Amendment of a TAC is required when adding a new model(s) to the existing TAC. The process followed is essentially the same as outlined above, with the exception that the data required is the relevant data applicable to the new model(s) only.

9.1.2. SACAA Form CA 21-04 needs to be completed by an applicant when applying for the amendment of an existing TAC.

9.1.3. An amended TAC will have the same assigned TAC number, with changes to the appropriate fields as required. The date of the amendment will be recorded on the TAC.

9.1.4. An application for amendment of a TAC is not required where the TC-holder has changed company name, or the TAC has been transferred to another company. The TAC is considered tied to the TC and is therefore still considered valid. For the latter case, continued airworthiness support shall have to be addressed by the new TC holder and a new agreement entered in with the SACAA.

9.2. Suspension or Cancellation of a TAC

9.2.1. Suspension or cancellation of a TAC may be carried out in accordance with SA-CAR Part 185.



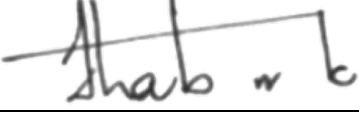

9.2.2. The following cases may necessitate the suspension or cancellation of a TAC:

- 9.2.2.1. The TC has been revoked by the State of Design
- 9.2.2.2. The TC has been rendered invalid by the State of Design
- 9.2.2.3. The TC holder has surrendered the TC
- 9.2.2.4. In the event of the above occurring, the TAC holder or State of Design must notify the SACAA of such
- 9.2.2.5. Supply of technical certification data or Continued Airworthiness Support is not forthcoming from the TC holder
- 9.2.2.6. There is a safety concern with the type accepted product

9.2.3. The suspension or cancellation may require that the SACAA issue an AD or similar notification to local operators.

9.2.4. The TAC holder and the State of Design will be informed of the SACAA decision to suspend or cancel a TAC.

10. DOCUMENT AUTHORISATION

DEVELOPED BY:		
	KIRAN DEBIPESAD	9 SEPTEMBER 2021
SIGNATURE OF CE:	NAME IN BLOCK LETTERS	DATE
REVIEWED BY:		
	JABULILE SIBEKO	9 SEPTEMBER 2021
SIGNATURE OF M: AED	NAME IN BLOCK LETTERS	DATE
VALIDATED BY:		
	LOBANG THABANTSO	9 SEPTEMBER 2021
SIGNATURE OF SM:	NAME IN BLOCK LETTERS	DATE
APPROVED BY:		
	SIMON SEGWABE	9 SEPTEMBER 2021
SIGNATURE OF E: ASO	NAME IN BLOCK LETTERS	DATE

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