Type Acceptance Report

TAR 18/21B/5

SOCATA TB Series

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Executive Summary

New Zealand Type Acceptance has been granted to the SOCATA TB9/10/20/21/200 Series based on validation of Type Certificate number EASA.A.378. There are no special requirements for import.

This report covers all the Models and serial numbers currently listed on the EASA Type Certificate, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Subsequent models or serial numbers approved under the EASA type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is generally only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 18/21B/5 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

(a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and

(b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and

(c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

The report also notes the status of all models included under the State-of-Design type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report. Models which were certificated prior to that under NZCAR Section B.9 and are type accepted under the transitional arrangements of Part 21 Appendix A(c) are listed in Appendix 1.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer: SOCATA

EADS SOCATA (2000 to 2009)

Société de Construction d'Avions de Tourisme et d'Affaires
SOCATA - Groupe AEROSPATIALE (1979 to 2000)

Type Certificate: EASA.A.378
Issued by: European Aviation Safety Agency

Production Approval: JAR21 No. F.G.027

(b) Models Covered by the Part 21B Type Acceptance Certificate:

(i) **Model:** TB10

MCTOW: 2535 lb. [1150 kg]

Max. No. of Seats: 5

Noise Standard: ICAO Annex 16

Engine: Lycoming O-360-A1AD
Type Certificate: E-286
Issued by: Federal Aviation Administration

Propeller: Hartzell HC-C2YK-1BF/F7666A-2
Type Certificate: P-920
Issued by: Federal Aviation Administration

(ii) **Model:** TB9

MCTOW: 2337 lb. [1060 kg]

Max. No. of Seats: 5

Noise Standard: ICAO Annex 16

Engine: Lycoming O-320-D1A or –D2A
Type Certificate: E-274
Issued by: Federal Aviation Administration

Propeller: Sensenich 74DM6 S8 061 or 054 or 058
Type Certificate: P-886
Issued by: Federal Aviation Administration

Propeller: Hartzell HC-C2YL-1BF/F7663A-4
Type Certificate: P-920
Issued by: Federal Aviation Administration

(iii) **Models:** TB20

MCTOW:	2943 lb. [1335 kg] – Aircraft without modification 50 3086 lb. [1400 kg]
Max. No. of Seats:	5
Noise Standard:	ICAO Annex 16
Engine:	Lycoming IO-540-C4D5D or B5D
Type Certificate:	1E4
Issued by:	Federal Aviation Administration
Propeller:	Hartzell HC-C2YK-1BF/F8477A-4
Type Certificate:	P-920
Issued by:	Federal Aviation Administration
Propeller:	Hartzell HC-C3YR-1RF/F7693F or FB (OPT10-61-001)
Type Certificate:	P25EA
Issued by:	Federal Aviation Administration

(iv) **Models:** TB21

MCTOW:	3086 lb. [1400 kg]
Max. No. of Seats:	5
Noise Standard:	ICAO Annex 16
Engine:	Lycoming TIO-540-AB1AD
Type Certificate:	E14EA
Issued by:	Federal Aviation Administration
Propeller:	Hartzell HC-C2YK-1BF/F8477A-4
Type Certificate:	P-920
Issued by:	Federal Aviation Administration
Propeller:	Hartzell HC-C3YR-1RF/F7693F or FB (OPT10-61-001)
Type Certificate:	P25EA
Issued by:	Federal Aviation Administration

(v) **Models:** TB200

MCTOW:	2535 lb. [1150 kg]
Max. No. of Seats:	5
Noise Standard:	ICAO Annex 16

Engine:	Lycoming IO-360-A1B6
Type Certificate:	1E10
Issued by:	Federal Aviation Administration

Propeller:	Hartzell HC-C2YK-1BF/F7666A-2
Type Certificate:	P-920
Issued by:	Federal Aviation Administration

NOTE: See Advisory Circular AC21-1 Appendix 2 for the New Zealand type acceptance status of engines and propellers listed above.

3. Application Details and Background Information

The application for New Zealand type acceptance of the TB20 "GT" serial number range was from the importer, dated 17 July 2017. The first-of-type example was serial number 2053, registered as ZK-SOC. The TB Series is a four-seat low-wing single-engined light aircraft of all-metal semi-monococque construction.

Type Acceptance Certificate Number 18/21B/5 was granted on 13 September 2017 to all the SOCATA TB Series that were not already type accepted, based on validation of Type Certificate EASA.A.378. There are no special requirements for import into New Zealand.

The 180 hp TB10 "Tobago" was the first model in the all-new TB "Caribbean" series developed by SOCATA in the late 1970s to replace the Rallye family. The TB9 "Tampico" was a cheaper version for the flight training market, with a160 hp engine, smaller fuel tanks, 4-ply tyres and different seats, and could be had with a fixed-pitch propeller. The TB20 "Trinidad" was a touring version with a 250 hp 6-cylinder engine and retractable undercarriage. Other changes included the wing dihedral increased to 6.5º, different profile on the aileron leading edge, electric wing flaps operating mechanism, larger horizontal stabiliser and a trim tab for the rudder, and increased fuel tanks capacity. The TB21 "Trinidad TC" was the same aircraft except for a turbocharged engine. The TB200 was a development of the TB10 with 200 hp fuel-injected engine. The models share a common fuselage, wing and empennage and no distinction is drawn between the airframes so that the variants all co-exist within the same run of serial numbers.

The TB Series were modernised in 2000 including a change to a 28 volt electrical system, and were known as "Generation Two". This applies to serial numbers 948 and later, plus S/N 823 to 849 and S/N 888. The marketing designation GT was added to the model names. GT versions have a bigger cabin and aerodynamic improvements, including shaped wing tips and vertical stabiliser. The rear windows are also more blended with the fuselage.

The first example of the TB Series on the New Zealand register was a TB9 which was registered ZK-TBA in 1982, while the first TB10s were ZK-MBR and ZK-MBS in 1994. The first examples of the TB20 were ZK-JFC followed by ZK-JCC, both in 1991.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) State-of-Design Type certificate:

EASA Type Certificate Data Sheet number A.378 at Issue 03 dated 6 October 2010
- Model TB10 approved April 26, 1979
- Model TB9 approved September 27, 1979
- Model TB20 approved December 18, 1981
- Model TB21 approved May 23, 1985
- Model TB200 approved October 30, 1991

This supersedes the original type certificate:

DGAC Certificat de Navigabilité de Type Numéro 165 – SOCATA TB Series

DGAC Fiche de Navigabilité No. 165 – SOCATA Avions

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:
The certification basis of the SOCATA TB Series is FAR Part 23, including Amendments 23-1 through 23-16. Two exemptions were granted for the TB9 and TB10, and one special condition applied to the TB21, which have been reviewed and accepted by the CAA.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, because FAR Part 23 is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) Special Conditions:
TB20:
FAR §23.1581 at Amendment 23-21 – Because the landing gear is being held in the retracted position by hydraulic pressure alone, some requirements are modified as follows: in §23.143 landing gear extension is checked up to V_{NO}, and in §23.729(a) the airspeed 1.6 V_{SI} is replaced by V_{NO}.

(iii) Equivalent Level of Safety Findings:
Nil

(iv) DGAC Exemptions:
TB9 and TB10:
FAR §23.177(a)(2) – A slight roll instability of the aircraft in the landing configuration during a go-around was accepted on the basis that the pilot is closely monitoring this phase of flight.

FAR §23.1401(f) – The Labinal 37-72-11 anti-collision light intensity with red glass optic lense is slightly less than that required by the regulation.

(v) Airworthiness Limitations:
See the DGAC-Approved Chapter 4 Airworthiness Limitations in the AMM

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:
The Model TB10 was certificated for noise against the French Decree dated April 15, 1977, and ICAO Chapter X, Appendix 6, Annex 16. For subsequent TB Models the French Decree at later dates and FAR Part 36 Appendix G were added.

(ii) Compliance Listing:
See the TCDS Section _.V Notes – Note 1 Approved Noise Levels.

(4) Certification Compliance Listing:

TB9 General Description – BE/EG No. 136/79 – RJ/JD Issue 1
TB9 No. 9 Compte-Rendu des Essais en Vol – R.EV/TB No. 5/79 – CL/SC
TB9 Safety Margins for the Structure – BE/EG No 248/79 – YV/PL Issue Nr 2

TB10 Aircraft: General Description – BE/EG No. 66/79 – RJ/JD Issue Nr 6
TB10 Note TB 10.02.800 Fatigue Life Assessment – TB/I No. 7/78 – YC/PL
TB10 Safety Margins for the Structure – BE/EG No. 140/79 – YC/PL

TB20 Description of Model (from s/n 731) – BE/EG No. 203/80 – RJ/PL
TB20 Recapitulative File of Safety Margins for the Structure – BE/EG No. 326/80

TB Aircraft Fatigue Tests – Report EG No.278/85 RJ – October 1985
(Summary of TB10 Fatigue Tests, Extrapolation of results to TB20 and TB21)

In-Flight Test Report – Compliance with Airworthiness Regulations FAR Part 23 – Amendment 16 included - Certification of the TB20 Airplane – R. EV/TB 4/81

FAR-23 Amendment 16 - Compliance Check-List - TB-9 "Tampico", TB-10 "Tobago", TB-20 "Trinidad" – BE/EG No. 60/83 – RJ/PL Edition 7 – January 1989

(5) Flight Manual:

French DGAC-Approved Airplane Flight Manual or Pilot's Operating Handbook, including EASA-Approved revision and temporary revisions, with model and serial number applicability as follows:

Model:	***Serial Number Range:***	***Part Number:***	***CAA No.:***
TB9:	S/N 1 to S/N 730	Z00.1800030986	AIR 2174
TB9:	S/N 731 to S/N 878 (except S/N 765)	Z00.1800030987	AIR 3455
TB9:	S/N 879 to S/N 947 (plus S/N 765)	Z00.1800030988	AIR 3456
TB9:	S/N 948 and up	Z00.DUDFM00EE3R2EN	AIR 3457
TB9:	S/N 948 and up (with Mod.139) “GT”	Z00.18000309E4R1	AIR 3458
TB10:	S/N 1 to S/N 730	Z00.1800031086R2	AIR 3459
TB10:	S/N 731 to S/N 822 (except S/N*)	Z00.1800031087R2	AIR 3460
TB10:	S/N 823 to S/N 947 (plus S/N*)	Z00.1800031088R2	AIR 2499
TB10:	S/N 948 and up “GT”	Z00.18000310E3R7	AIR 2395

S/N * is (S/N 840, 807, 808 and S/N 816 to s/n 819)

TB20	S/N 1 to S/N 587 (without Kit.9118)	Z00.1800032084	AIR 2417
TB20	S/N 588 to S/N 730 (plus S/N 1 to S/N 587 with Kit.9118 [mod.50])	Z00.1800032085	AIR 3461
TB20	S/N 731 to 878 (except 823 to 849)	Z00.1800032086	AIR 2416
TB20	S/N 879 to S/N 947 (except S/N 888)	Z00.1800032087	AIR 3462
TB20	S/N 948 and up (plus S/N 823 to 849 and 888) "GT"	Z00.18000320E2R11	AIR 3387
TB21:	S/N 1 to S/N 730	Z00.1800032185	AIR 3463
TB21:	S/N 731 to S/N 878	Z00.1800032186R2	AIR 3464
TB21:	S/N 879 to S/N 947	Z00.1800032187R1	AIR 3465
TB21:	S/N 948 and up "GT"	Z00.18000321E2R6	AIR 3466
TB200:	S/N 1 and up	Z00.18000322E0R6	AIR 3467

(6) Operating Data for Aircraft:

(i) Maintenance Manual:

TB9 Maintenance Manual – Part Number Z00.18010309E0R19

TB10 Maintenance Manual – Part Number Z00.18010310E0R19

TB20 Maintenance Manual – Part Number Z00.18010320E0R19

TB21 Maintenance Manual – Part Number Z00.18010321E0R19

TB9-10-200 (14 Volt) Electrical Maintenance Manual – P/N Z00.18320310E0R6

TB9-10-200 "Generation Two" (28V) Wiring Manual – P/N Z00.18322028E0R3

TB20-21 (14 Volt) Electrical Maintenance Manual – Part No, Z00.18320320E0R5

TB20-21 "Generation Two" (28V) Wiring Manual – Part No. Z00.18322029E0R3

(ii) Current service Information:

Service Bulletins

Service Letters

SOCATA Information Bulletins (I.B.)

SOCATA Information (S.I.)

(iii) Illustrated Parts Catalogue:

TB9 Standard IPC – Part Number Z00.18082009E0R17

TB10 Standard IPC – Part Number Z00.18082010E0R17

TB20 Standard IPC – Part Number Z00.18082020E0R17

TB21 Standard IPC – Part Number Z00.18082021E0R17

(7) Agreement from manufacturer to supply updates of data in (5), and (6):

SOCATA provides CAA access to publications at www.mysocata.com

(8) Other information:

TB9 Standard and Optional Equipment List – BE/EQ No. 233/79 Issue Nr 3

Electrical Load Analysis IFR TB9 Aircraft – BE/EQ No 255/79 – ET/PL

TB9/TB10 List of Equipment – NAV No.232/89-RJ Issue No.7 January 2005
28-Volt Electrical Power – From S/N 948

TB10 Standard and Optional Equipment List – BE/EG No. 74/79 Issue Nr 4

Electrical Load Analysis IFR TB10 Aircraft – BE/ED No. 183/78 – ET/PL

TB20 List of Equipment – NAV No. 92/89 – RJ Issue No.8 January 2005
(28-Volt Electrical Power, S/N 823-849, 888 and 948 up)

Electrical Load Analysis TB20 – 28 VDC Generation – BE/EQ No. 285/88

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

CAR Part 26: Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	***To be determined on an individual aircraft basis***
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

CAR Part 91: Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:	
91.505	Seating and Restraints – Safety belt/Shoulder Harness		FAR §23.785	
91.507	Pax Information Signs – Smoking, safety belts fastened		Not Applicable – Less than 10 passenger seats	
91.509 Min. VFR	(1) ASI	FAR §23.1303(a)	(8) Coolant Temp	N/A – Air cooled engine fitted
	(2) Machmeter	N/A – No Mach limitations	(9) Oil Temperature	FAR §23.1305(c)
	(3) Altimeter	FAR §23.1303(b)	(10) Manifold Pressure	FAR §23.1305(h)
	(4) Magnetic Compass	FAR §23.1303(c)	(11) Cylinder Head Temp.	FAR §23.1305(f)
	(5) Fuel Contents	FAR §23.1305(a)	(12) Flap Position	FAR §23.699(a)(2)
	(6) Engine RPM	FAR §23.1305(d)	(13) U/c Position	N/A or FAR §23.729(e)
	(7) Oil Pressure	FAR §23.1305(b)	(14) Ammeter/Voltmeter	FAR §23.1351
91.511	Night VFR Instruments and Equipment		***Operational requirement – Compliance as applicable***	
91.513	VFR Communication Equipment		***Operational requirement – Compliance as applicable***	
91.517	IFR Instruments and Equipment		***Operational requirement – Compliance as applicable***	
91.519	IFR Communication and Navigation Equipment		***Operational requirement – Compliance as applicable***	
91.523	Emergency Equipment: (a) More Than 9 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily accessible to crew (c) More than 61 pax – Portable Megaphones per Table 9		 ***Operational Requirement – Compliance as applicable*** ***Operational Requirement – Compliance as applicable*** Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats	
91.529	ELT – TSO C126 406 MHz after 22/11/2007		***Operational requirement – Compliance as applicable***	
91.531	Oxygen Indicators – Volume/Pressure/Delivery		***Operational requirement – Compliance as applicable***	
91.533	Oxygen for non-Pressurised Aircraft		***Operational requirement – Compliance as applicable***	
91.541	SSR Transponder and Altitude Reporting Equipment		***Operational requirement – Compliance as applicable***	
91.543	Altitude Alerting Device – Turbojet or Turbofan		Not Applicable – Not turbo jet or turbofan powered	
91.545	Assigned Altitude Indicator		***Operational requirement – Compliance as applicable***	
A.15	ELT Installation Requirements		***To be determined on an individual aircraft basis***	

CAR Part 135: Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness flight-crew seats		FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)		FAR §23.1305
135.359	Night Flight	Landing light, Pax compartment	***Operational requirement – Compliance as applicable***
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***Operational requirement – Compliance as applicable***
135.363	Emergency Equipment (Part 91.523 (a) and (b))		***Operational requirement – Compliance as applicable***
135.367	Cockpit Voice Recorder		N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder		Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator		Not Applicable – Not turbo jet or turbofan powered

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.

2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.

Attachments

The following documents form attachments to this report:

Three-view drawing SOCATA Model TB20 Trinidad
Copy of Type Certificate Data Sheet Number EASA.A.378

Sign off

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David Gill	Checked – Craig Bamber
Team Leader Airworthiness	Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
TB9	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
TB10	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
TB20	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
TB20 “GT”, TB21, TB200	H Bechgaard	18/21B/5	13 September 2017