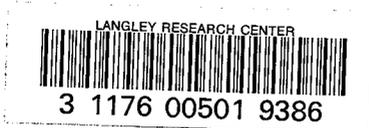


NASA TM-76706



NASA-TM-76706 19820014373

SOCATA: TB 20 TRINIDAD GIVEN GERMAN DEBUT

B. Malzbender

Translation of "Socata: TB 20 Trinidad gab Deutschland-Debut", Aerokurier, No. 12, December 1981, pp. 1543; 1546-1547.

LIBRARY COPY

APR 1 1982

LANGLEY RESEARCH CENTER
LIBRARY, NASA
HAMPTON, VIRGINIA

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON D. C. 20546 MARCH 1982



STANDARD TITLE PAGE

1. Report No. NASA TM-76706	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle SOCATA: TB 20 TRINIDAD GIVEN GERMAN DEBUT		5. Report Date MARCH 1982	6. Performing Organization Code
		8. Performing Organization Report No.	10. Work Unit No.
7. Author(s) B. Malzbender		11. Contract or Grant No. NASw- 3542	13. Type of Report and Period Covered Translation
		14. Sponsoring Agency Code	
9. Performing Organization Name and Address SCITRAN Box 5456 Santa Barbara, CA 93108		12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546	
15. Supplementary Notes Translation of "Socata: TB 20 Trinidad gab Deutschland- Debut", Aerokurier, No. 12, December 1981, pp. 1543; 1546-1547.			
16. Abstract This is a magazine article discussing a new model airplane, the TB 20 Trinidad. Some pilot impressions gained in a first flight in the airplane are given, as are the aircraft's specifications.			
17. Key Words (Selected by Author(s))		18. Distribution Statement Unclassified - Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 13	22. Price

SOCATA:

TB 20 TRINIDAD HAD A DEBUT IN GERMANY

The 250 HP TB 20 aircraft with retractable landing gear and the license F-WDBB is one of the prototypes which is now being prototype tested on the international level after successful flight testing by Socata.

Already up to the first publications in the press (see Aero-kurier 4/81 page 396) and especially when presented at Le Bourget in the summer of this year, there was wide public interest for the TB 20 Trinidad, which completes the type spectrum of the TB series. There was also interest at Breitscheid where specialists from far and nearby came to visit by car, in spite of the poor weather, and maybe because of it. Therefore, the test flights were rather short but there was enough time to get a first impression.

Over 100 flight hours have been logged with this series prototype and at the beginning of the demonstration week it landed in Breitscheid coming from Sweden and Denmark. On the following day there was a short presentation of noise measurements at the LBA. This led the Rallye people to give optimistic forecasts about the formalities of prototype acceptance for the following spring. The great interest in the TB 20 is underlined by the fact that out of the 11 aircraft planned for the 1982 contingent, seven have already been sold.

This November there were reasons for festivities at the Rallye Germany in Breitscheid. The reason for this was the TB 20 Trinidad the first delivery of which is planned in West Germany for January 1982. For one week the Socata representative in Breitscheid made

* Nos. in margin indicate foreign text pagination.

the airplane available to the press and customers, and it was available for test flight. The Trinidad is the top model of the TB Family which has become more and more successful. The Trinidad is looking for the upper spectrum of the single motor aircraft on the market. As a French product, it is not affected by the high dollar price except for the engine, and at the present time, Germans can profit from the weakness in the French franc. Bernd Malzbender flew the Trinidad for the Aerokurier Magazine. We give his report. A pilot report will be given in a later Aerokurier issue.

Its introduction into the TB series about two and a half years ago has resulted in a strong rise on the European market, which is reflected in a substantial market fraction of 25% of the new licensing of comparable aircraft. In spite of strong US competition on the European market, this success has encouraged Socata to establish itself in the outer European market.

Good results were achieved in the Australian market where 30 aircraft have been sold. South Africa was very interested in the TB 20 Trinidad. It is no wonder that this aircraft is especially suited for overcoming long distances. It was found that the Socata market strategy with one aircraft seems to be proving itself which was not designed for the European but for the world market.

IMPROVEMENTS

During the development and flight testing of the TB 20, the TB type series was subjected to optical and technical improvements. All of the types of the TB series built in 1982 were equipped with these improvements. In the future doors will be made of metal which improves matching with the airframe and improves the ceiling properties of the airplane. The head clearance at the seats was improved by about three centimeters, by dropping the seats. In addition, the TB series after 1982 will be given a cable trim which allows a finer and more accurate trimming. This change was done through the TB 20



**Socata:
TB 20 Trinidad gab Deutschland-Debut**

Meeting of two Aerospatiale hits: AS 355E 2 (Twinstar) and TB20 Trinidad.

which now offers the possibilities of installing an autopilot. Finally the new TB's have different tank locks, an outer symbol of a change in the wing tanks. The wing capacity is now specified by variable tank sizes and not by the filling connection of various lengths as before. An exact limitation of the tank capacity was not possible in practice.

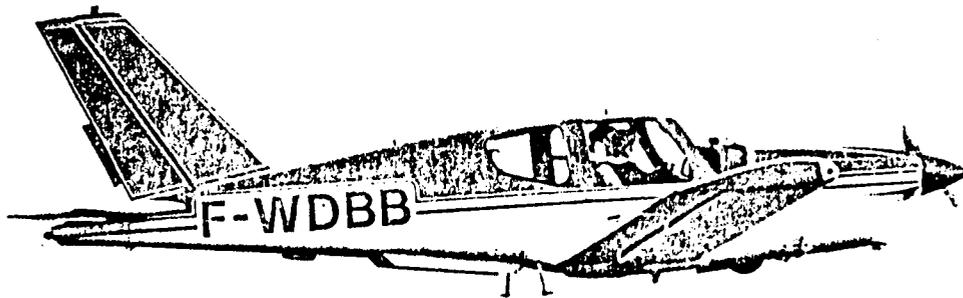
THE TYPE OFFERINGS ARE FRESHENED UP

At the same time the TB series was completed, Socata decided to restrict the Rallye types. The Garnement (115 kW, 155 HP) and the Gaillard (134 kW, 180 HP) were no longer planned for production which does not mean that these aircraft are no longer available. It is only that the customer, if he decides for one of these two aircraft, will have to deal with price and delivery times. In the ¹⁵⁴⁶ 1982 type offerings of the Rallye series, there are the three to four passenger training and cruise machine Galopin (110 ST Früher with 82 kW engines (100 HP) and the proven glider pulling machine Galérien with 134 kW Lycoming engine (180 HP) which is the only aircraft with an improved noise characteristic of 63.3 dBA. This will certainly be appreciated in Switzerland and Germany.

We should finally mention the Gabier (earlier the Rallye 235 GT) which has a 175 kW engine (235 HP) and a larger airframe which makes it suitable for work assignments. Three aircraft are planned for 1982 in the Socata program, the 119 kW (160 HP) TB 9 Tampico, which can be delivered with an adjustable propeller, the 134 kW (180 HP) TB 10 Tobago with four to five seats and, of course, the five seat 186 kW (250 HP) TB 20 Trinidad with retractable landing gear.

NEW IN THE PROGRAM: ROBIN 3000

The present series will be complemented in 1983 by the 3000 of the firm Robin, and first these will be aircraft which have a

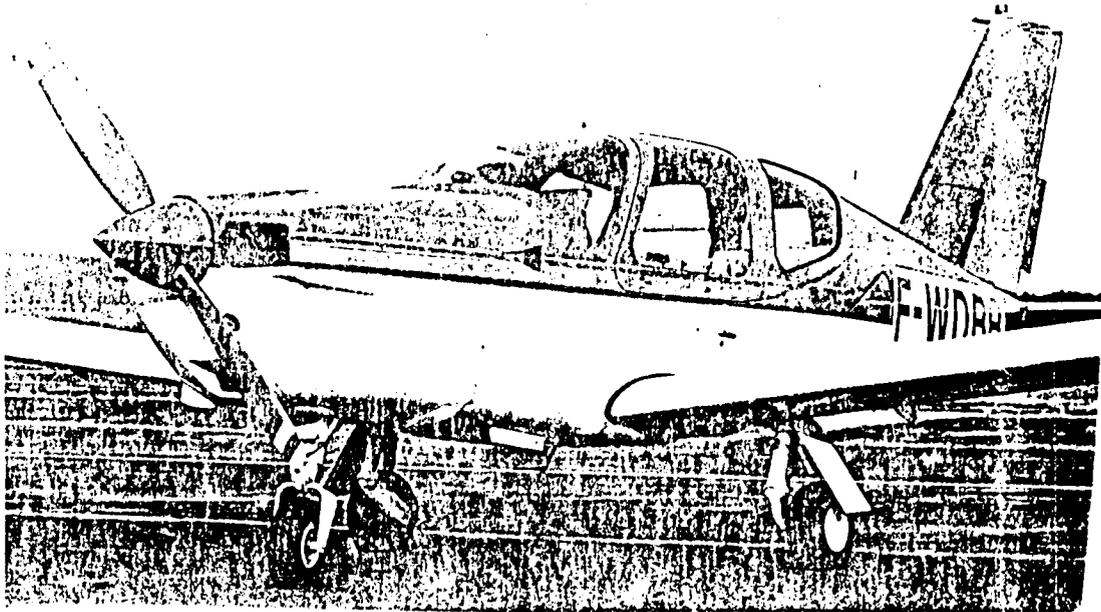


The lines of the TB Family can be seen completely with a retracted landing gear. The preliminary peak model of the TB Family of the French Socata is the TB 20.

lower power than the TB class. It is thinkable that the Socata in the future will participate in the development of the 3000 series Robin.

SERVICE

The great success of the Socata aircraft of the Rallye series and the TB series can be attributed in part to the German selling organization of the Socata which is located in Breitscheid, the company Rallye Germany. An important part of the marketing strategy of Rallye Germany is the customer service already reported in this magazine. Starting with the principle that an aircraft is only as good as its service, Rallye Germany is proud of the fact that no customer has to fly longer than 30 minutes in order to reach any servicing operation of the German service network. Rallye in fall of last year established 16 aviation companies which build the bases



Soft landings are facilitated by the articulated wheel suspension of the TB20 main landing gear

for the well functioning maintenance network. In the spring of 1981, the operators were invited to Tarbes in order to become familiar with the production and assembly methods of the Socata.

For the introduction of the TB 20 Trinidad, the mechanics were invited to Breitscheid in order to become familiar with the maintenance work of the most recent addition to the TB Family. The service contracts which Rallye Germany signed with the companies have the purpose of equalizing the substantial price differences for the same work, that is to establish them at a medium level. After the spring of 1982, routine maintenance work will be performed with the same work expenditure at the installations connected with the Rallye network. After 1982, the customer will be able to exactly establish the cost of a 100 hour check before he turns the aircraft over to the company. For this purpose he multiplies the unit hour cost by the number of hours of the corresponding facility and then arrives at a guaranteed fixed price for the maintenance

and he has to add the expenditures for parts, lubricants, etc.

The training and retraining of the testing and mechanics of the companies associated with the Rallye service network is very important for the Rallye organization in Breitscheid. There are yearly meetings for education, either at the manufacturing plant or at Rallye Germany in Breitscheid.

The hourly expenditures are to be unified according to a uniform service program which is now being implemented. In this way, equipment kits will be offered at unit prices which can be installed.

TB 20: LIKE A ROCKET

During the introduction of the TB 20 Trinidad in West Germany, the Aerokurier Magazine had the opportunity to briefly fly the aircraft in Breitscheid. The short flight does make it possible to discuss first impressions, but there is not enough information for an Aerokurier flight report which we will publish in the spring, as soon as the first mass produced machine is available at Breitscheid.

Far away the Trinidad looks like one of its sisters, the TB 9 or the TB 10. The elevator control surface is somewhat larger compared with these. In contrast to aerodynamically shaped landing gear cowlings on the TB 9 and TB 10, one sees somewhat more of the hydraulic inner lines of the landing gear legs in the Trinidad.

I sat in the spacious cabin and I noticed the substantially improved head clearance by lowering the seats. The aircraft is top instrumented. The right instrument block has two levels, which makes the entire panel more substantial but not unelegant. The landing gear lever with the control lights is directly to the right next to the control horn and is about the only important difference with respect to the instrument panel of the usual TB series.

SOCATA TB20 TRINIDAD DATA

Manufacturer	Socata Tarbes Frankreich
--------------	--------------------------------

prototype	TB20 Trinidad
-----------	------------------

engine	Lycoming 10-540C-4D5D
performance	kw 184
	4 HP 250
for	U/min 2575
cylinder	6

crew + passengers	1 + 4
-------------------	-------

span	m	9.77
length	m	7.71
height	m	2.85
wing area	m ²	11.90
aspect ratio		8
cabin dimensions		
length	m	2.53
width	m	1.28
height	m	1.12

empty weight	kg	762
crew	kg	80
fuel (max.)	kg	238
	l	236
fuel for approach	l	326
payload (for max. fuel)	kg	261
addl. load	kg	579
baggage (max.)	kg	50
max. departure wt	kg	1341
area loading	kg/m ²	113

performance for max. takeoff wt.		
max. speed	kts	168
	km/h	312
cruise speed for 75%		
power at 8000 ft	kts	163
	km/h	312
cruise speed for 65%		
power at 12,000 ft	kts	160
	km/h	296
stall speed flaps, landing gear retracted		
	kts	63
	km/h	118
stall speed flaps, in takeoff position, landing gear deployed		
	kts	59
	km/h	110

prototype	TB20 Trinidad
-----------	------------------

stall speed flaps, in landing position, landing gear deployed	kts	53
	km/h	99

ascent performance	fpm	1260
	m/s	6.3

usable peak altitude	ft	20000
	m	6500

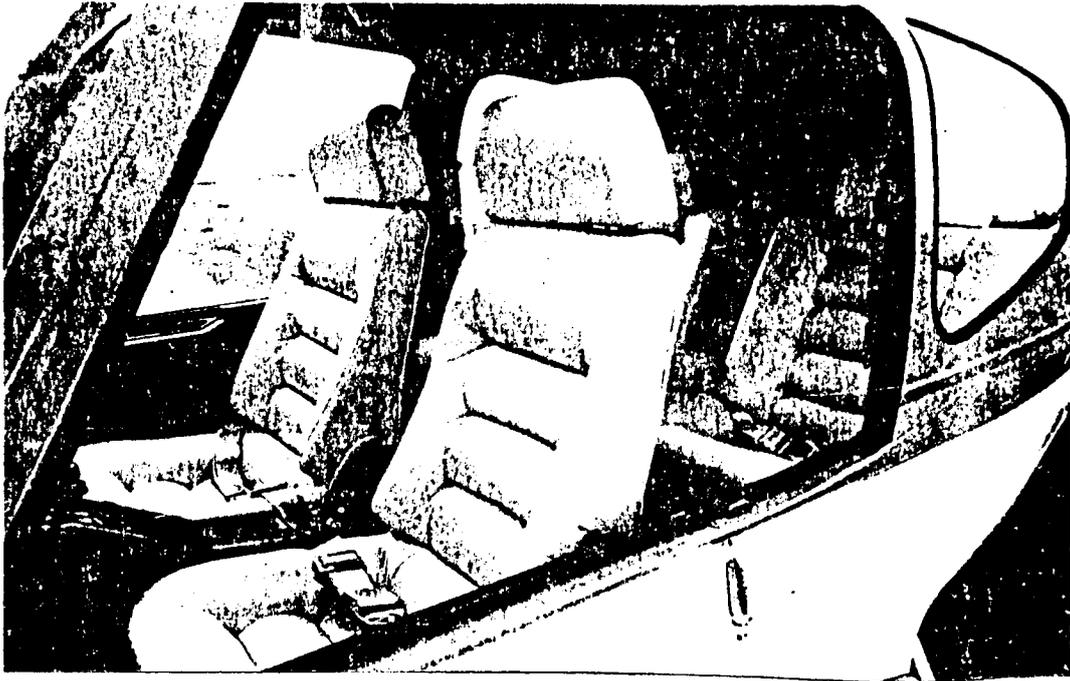
takeoff roll distance	m	295
-----------------------	---	-----

takeoff distance up to 15 m height	m	479
------------------------------------	---	-----

landing distance from 15 m height	m	530
-----------------------------------	---	-----

landing roll distance	m	230
-----------------------	---	-----

max. range	km	2145
for 75% at 8500 ft	km	1610
for 65% at 12000 ft	km	1725



Elegant and inviting and comfortable: The cabin of the TB Family. A view into the new TB20.

The 250 HP Lycoming engine immediately starts and its pleasant sounds are noticeable. After the usual checks, I sat up on the runway in Breitscheid and immediately give full power. The TB 20 Trinidad rises up like a rocket. 115 km/h rotation, I have to pull substantially in order to make the nose go up. The large weight of the motor is felt here. I let the airspeed indicator go to 135 km/h and instinctively, I try to trim off the large pull of the control column.

One first has to get adjusted to the rope trim system. Several trim motions are required in order to adjust the desired speed. It is sufficient to adjust this and it can be done very accurately. I operate the landing gear lever and the green control lights turn off which indicate locked landing gear.

The aircraft in the meantime has reached 170 km/h and rises much faster than 1000 ftm (5 m/s). The clouds are rapidly reached and I trim the TB 20 for normal flight. Even though the power has in the meantime been reduced to 75%, the distance instrument soon indicates the 300 km/h mark.

At this speed and the relatively low flight altitude, the dimensions shrink. Very soon we have reached the airport Siegerland and in the last second I am able to tell the airport I am passing over. The interior noise level of the TB 20 is somewhat higher than in the TB 9 and TB 10. Because of the substantially improved quietness of the six cylinder motor, there is a compensation for this.

The French pilot demonstrates the TB 20 for slow flight conditions. The landing gear is deployed, the flaps are in the landing configuration. I can see clearly how the speedometer goes below the 100 km/h limit. The aircraft flies with a audible stall indication warning and still can be controlled well, and not only for straight flight. Still no separation phenomena can be felt and I observed the wool threads pasted to the wing, which all lie in the flow direction except for one which points outwards. The flight altitude is too low to make the aircraft tip over, but the stall properties of this aircraft are very substantial which had just been flown at 300 km/h.

We simulate a failure in the electrical system of the landing gear operating system. The landing gear kinematics is designed so that the deployed state is the normal state, and therefore, when the electrical system fails, it is sufficient to operate the emergency button to the left next to the fuses in order to make the landing gear fall out and lock.

During landing, we fly at 140 km/h, I noticed that the ground effect in the TB 20 is much shorter than for already known TB models.

Apparently, we can feel the somewhat larger weight of the Trinidad. The rocketlike acceleration during takeoff are one of the features which I remember very well during this test flight of the TB 20, as well as the rapid development of the flight itself with an extremely steep ascent, the high cruise speed of about 300 km/h and the surprising stall property for slow flight.

This aircraft will be successful; it offers performance, comfort and classy styling at an attractive price.

For 450,000 French francs, the TB 20 is offered in the simplest version. In addition to the standard equipment for the TB 9 and TB 10, the Trinidad has a gasoline flow meter, a flap preselector and a side rudder trim. For the top equipped TB 20, there is complete IFR, including autopilot, but this goes at a price of 550,000 French francs, or 214,500 dm. This is a lot of money, but one gets a lot of aircraft for this.

Bernd Malzbender

End of Document