



**M**Y FIRST IMPRESSION of the eighteen-year-old TB 20 that I'm about to fly is of a lovely aircraft. The excellent condition totally belies its age, and is a credit to owner Clive Francis.

The airframe is basically of all-metal construction. Cabin roof and doors are of composite construction and sit in a recess in the load-bearing metal fuselage. The cabin looks square in cross-section, giving a very roomy impression, as befits the widest in its class.

The rear fuselage continues this square section, tapering uniformly to a point. The stabilator is mounted on top of the rear fuselage, aft of the rudder. The fin and rudder are tall and large, the rudder being aerodynamically balanced and having a cockpit-adjustable trim tab. The stabilator is huge, twelve feet in span, with a large trim/anti-servo tab in the centre.

The wings are a typically unconventional piece of French engineering. They have a one-piece, tip-to-tip milled aluminium spar with a marked dihedral of 6.5°. The middle third of the wing each side contains the ample fuel tanks; inboard are the wide-tracked main wheels which retract inwards to disappear neatly into their wells. The nose-wheel retracts rearwards, leaving just a small area of tyre showing. The combined effect gives a very sleek look to the aircraft in flight.

The flaps are about two-thirds span leaving room for quite small ailerons. A small hatch behind and below the left-hand rear window gives access to a large luggage area behind the rear seats.

G-BPAS has recently had a cockpit overhaul, including Connolly hide seats, so I discover the smell and comfort of an old Jaguar. And the replacement engine has only flown four hours.

The walkround check is generally easy to carry out, but requires the usual crawling under wings to check the undercarriage and the fuel drains. Under the engine cowlings the nice new grey IO-540 Lycoming still has that distinct smell of oil and fresh paint.

Access to the cabin is via a stirrup, one on each side, aft of the wing trailing edges. From here you step onto the wing walkways and then climb in through the gull-wing doors. The

*Ernie Hoblyn flies an early model—and the latest GT version, which he finds much improved, and more enjoyable to fly. Photos mostly by Peter R March.*

ease of access via these doors is excellent, allowing both front- and rear-seat passengers to step into the body of the cabin. The front seats tilt forward for ease of access to the rear. The door sills are quite high but not inconveniently so. Access—and emergency egress—should always be this easy, although making an aircraft with gull-wing doors requires a lot more strengthening, and hence weight.

The instrument panel is so comprehensive it uses every bit of space on both sides of the cockpit. Apart from all the engine instruments, which includes a fuel-flow computer, the avionics fit comprises a Garmin GPS 150, KC 55a HSI slaved compass gyro, KNS 80 VOR/DME nav computer, dual comms, second nav/VOR, ADF, Stormscope, transponder, marker receiver, and autopilot with flight director coupled to the HSI and nav computer. The autopilot will even fly the ILS and

glideslope for you. The fuel flow meter is coupled to the GPS for fuel planning, monitoring and diversion calculations.

My only gripe about the panel layout is that the tachometer and manifold pressure gauges are on the right-hand side, directly in front of the passenger, albeit angled towards my side, with the pressure gauge hidden behind the yoke. I feel that they were difficult to read accurately (which may say as much about my eyesight as their position), and looking at them at all meant a major distraction from the job in hand. That apart, the panel is impressive by anyone's standards.

On the pilot's left is a vast array of contact-breakers. With an eye on the U.S. market the designers have tried to avoid language problems by using symbols instead of labels, but frankly these left me baffled.

The air-conditioning system, every bit as

## The Socata TBs

THE SOCATA TB series was mooted in 1975, the idea being to produce a basic airframe from which a series of models could be developed. The first to fly was the TB 10 Tobago fixed-gear, 180 hp, four/five seater in 1977. This was followed in 1980 by the fixed-gear, 160 hp, four-seat TB 9 Tampico and the TB 20 Trinidad, which is basically the same fuselage as the Tobago but with retractable gear and a 250 hp Lycoming.

The TB 20 was updated in 1984 by increasing the mtow to 3,086 lb, the landing weight remaining at 2,943 lb. A further update in 1990, starting with aircraft number 950, included strengthened undercarriage, allowing the landing and take-off weights to be equalised, and also a 28-volt electrical system. By early 1999, Socata had sold 600 TB 20s, and 80 of the turbocharged TB 21 Trinidad TC versions.

The prototype of the new model TB 20 was first flown in April 1999, at that stage being named the NG or Nouvelle Generation. This was later changed to the GT or Generation Two, reputedly when the French realised that in America NG can be used as shorthand for No Good! The first production version was rolled out in February 2000 and I flew aircraft number 2004. By August, Air Touring were selling number 2014, so they are selling fast!





good as in an expensive car, is controlled by a system of levers under the right-hand yoke. It provides air at the required temperature to all four seats with fresh air available separately—this is an aircraft designed for long-distance travel in comfort.

The engine start-up procedure is the same as for any injected Lycoming engine—fuel pump on to prime the system with mixture full rich, then set the mixture to full lean and crank the engine until it fires. At this point I need three hands to push the mixture fully rich and catch the engine on the throttle while still holding the key in the cranking position. With the engine running smoothly and a decent oil



be 1,250 fpm. Once clear of Exeter's airspace, I reset the engine to 65 per cent power, 2,300 rpm and 23 inches, then spend some time getting the feel of the plane.

The controls, which are rod operated, are a bit on the heavy side, with the ailerons being heaviest. Control response generally is good and the plane can be flown accurately, aided by the electric elevator trim and manual rudder trim. It can easily be trimmed to fly hands-off and even without the autopilot it happily flies itself. Roll response is not sparkling, probably due to the small ailerons, but I would imagine it has as much to do with roll inertia due to 36 gallons of fuel in the middle of each wing. Certainly, I find rolling from steep turn to steep turn a bit ponderous, but this roll inertia plus the high wing-loading makes it an ideal instrument platform, stable and heavy enough to plough through turbulence and barely acknowledging today's thermals.

**Eighteen-year-old TB 20 lacks a sparkling roll response, but proves easy to trim to fly hands-off—'an ideal instrument platform'. Excellent access, via gull-wing doors, to an impressive panel and a cabin designed for comfort.**

I try a stall, with some power on because of the engine limitations. Not only is the stall itself benign, the pre-stall buffet



pressure showing, I taxi to the hold.

After the standard engine checks and take-off clearance, I pull onto the runway and ease the throttle lever forward. The acceleration is good and at seventy knots we are airborne.

The normal procedure is to apply the brakes and retract the gear at fifty feet, flaps up at 300 feet, and climb out at full power with mixture full rich and pitch set to fine, trimming for a speed of 92 knots. Because of the new engine, Clive has asked me to leave the gear down until we are well established in the climb with no adverse engine readings. I also need to climb at 120 knots to keep the engine cool.

Once we are happy all is well, I set the prop to 2,500 rpm and manifold to 25 inches to give us a gentle cruise-climb, then I retract the gear. Even with the engine restrictions, we are climbing at nearly 1,000 fpm. If the engine had been run in, the manual tells me that operating out of Exeter (102 feet above sea level) at ISA and mauw, the climb would

be 1,250 fpm. Once clear of Exeter's airspace, I reset the engine to 65 per cent power, 2,300 rpm and 23 inches, then spend some time getting the feel of the plane.

I join the Dunkswell circuit to try a landing. As with all fast, retractable aircraft you need to think ahead and plan your approach rather more than would be necessary in a slower aircraft. As soon as we join downwind I throttle back to 120 knots and put the gear down—the maximum gear extension speed is 130 knots. On turning base, I put the flaps down as well—flap limiting speed is 100 knots—and trim back to ninety. I am happy with the approach at that speed although it needs quite a bit of power to hold any excess sink, which should tell me something...

I ease the speed back to 75 knots once we are over the threshold and hold it off, letting the speed decay. Then I make the mistake of chopping the trickle of power back to idle. As soon



## Socata TB 20 Trinidad & TB 20 Trinidad GT

	TB 20	TB 20 GT
<b>Dimensions</b>		
Span	32.05 ft	same
Length	25.29 ft	same
Height	9.35 ft	same
<b>Weights &amp; loadings</b>		
Empty weight	1,872 lb	1,764 lb
Mauw	2,943 lb	3,086 lb
Useful load	1,071 lb	1,322 lb
Usable fuel	86 usg	same
Baggage capacity	110 lb	143 lb
<b>Performance</b>		
Cruise at 65%	145 kt	142 kt
Stall, clean	64 kt	70 kt
Stall, gear, full flaps	53 kt	59 kt
V <sub>ne</sub>	189 kt	same
Take-off to 50 feet	2,470 ft	2,150 ft
Landing roll	755 ft	same
Climb, s/l, mauw	1,250 fpm	1,200 fpm
Service ceiling	20,000 ft	same

Engine: Lycoming IO-540-C4D5D 250 hp.  
Propeller: Hartzell two-blade HC-C2 YK-1BF/F8477-4.

Manufacturer: Socata Aerospatiale Matra, Tarbes-Lourdes-Pyrenees Airport, BP 930, 65009, Tarbes, France. Tel: 00 33 5 62 41 73 00, web: [www.socata.com](http://www.socata.com)

Prices. G-BPAS: for a similarly equipped aircraft, in the region of £90,000. TB 20 GT: £165,000 plus VAT for a new aircraft. Distributor: Air Touring, Buildings 204-205, Biggin Hill Airport, Kent TN16 3BN. Tel: 01959 573652, e-mail: [sales@airtouringltd.co.uk](mailto:sales@airtouringltd.co.uk) web: [www.airtouringltd.co.uk](http://www.airtouringltd.co.uk)

as the power comes off it drops the last few inches onto the tarmac with a bump. No damage is done to anything other than my pride I'm glad to say, but it is a lesson well learnt. With no power on, it drops like a stone due to the high wing-loading, unlike the Mooney I used to fly. That would float forever, but then the Mooney has over a third more wing area.

After a photoshoot, we return to Exeter, where Clive flies an engine-out approach just to show me how it is done—very steeply as it happens. I should point out that Clive is a former Squadron Leader and was a Cranwell instructor!

One point of interest from the flight manual: in flight the undercarriage is held up by hydraulic pressure, with emergency extension relying on gravity. This seems like a good idea in theory, but I am told by a friend who owned one that in practice gravity is barely enough to lower the nosewheel against the airflow and it is necessary to slow down well below the recommended 97 knots to aid extension.

So what are my impressions? From a pilot's point of view I don't like the position of the engine gauges and find the controls heavy but effective. That apart, its smooth ride, solid feel, precise handling and attention to comfort make it feel like an airborne version of an expensive and well designed car.

Full tanks can give 6.5 hours flying when leaned right off at 65 per cent, giving a cruise of 145 knots. That means a range of 940 nm—so on a good day you might make Rome in one go. Certainly, if you are looking for a fast, touring, IFR aircraft capable of taking four people and baggage to the South of France, then look no further.





## Generation Two

**F**-OILL IS ONE of the brand-new TB 20 GTs. The updated version I fly for this test will eventually take the new Morane Renault diesel engines, but at present is still powered by the Lycoming IO-540. F-OILL is awaiting collection from Biggin Hill by its new owner and will spend its life in the Middle East—the French registration is only temporary.

The aircraft is beautifully finished, with a customised paint job and all the goodies to make the inside as comfortable as possible. This is a top of the range TB 20 GT Excellence, and as such the standard fit is impressive and comprehensive; the only options apart from a choice of navaid packages are Stormscope and full TKS de-icing system. Given its destination, I am not surprised to find that it is to be fitted with air conditioning.

On first seeing the new aircraft it is easy to think that there is no difference from the old one. Closer inspection reveals a rounded cabin roof instead of a flat one. The wingtips have sprouted fancy new fairings (the French appropriately call them salmon) and the fin has a rounded fairing where it joins the fuselage. The windows are now flush-mounted, reducing drag. The mounting stirrups now retract with the undercarriage, an eminently sensible idea given the damage they can do to an airframe in a wheels-up landing. The baggage compartment and its access door are both larger, allowing a couple of full-size suitcases to be loaded. These may seem small changes, but the effect on passenger comfort and flight characteristics is marked.

I first climb into the back seat to try that for ease of access and comfort. Cabin height has always been a gripe for owners of the older models. I am six feet tall and I find that I can climb into the back seat with ease and sit comfortably with a couple of inches of space above my head. The designers have achieved this in two ways—they have increased the headroom by rounding the roof, and they have lowered the rear seat by 1.5

cm. The roof is made of carbon fibre, so it is stronger and lighter than the old GRP/aluminium composite one. This means that the aircraft, always one of the widest in its class, now has the height to match.

Climbing into the left front seat, I have a good look around the bewildering array of instruments fitted to this aircraft. I am pleased to be flying with Graham Corbin, a mechanic with Air Touring and a man with a great many hours on type. He will supply me with all the numbers I need.

The nav fit in this aircraft is: KLN90B GPS coupled to HSI, KX165 nav/com plus KCS55A, KX155 nav/com plus KI203, KN62 DME, KR87 ADF plus KI227-01 synchronised with KX165, KT76A encoding transponder, KFC150 autopilot/flight director plus a PMA7000S audio/marker with four-place intercom and even a music system. The aircraft is also fitted with an ELT.

**New GT's panel is familiar, although engine gauges are now easier to read. Avionics fit extends to a music system. Centre console mounts manual trim wheels.**



Apart from the navaid stack, the panel layout is familiar to me after my flight in the very early model. Although the engine gauges are still on the other side of the aircraft, I find them easier to read. The yoke is festooned with switches, including PTT, autopilot disconnect and electric trim. The centre console carries the switches for the electric fuel pump, strobes, beacon etc and the three-position flap control, which has up, take-off and landing positions. Behind this are the engine controls, and further back are the manual trimwheel for the stabilator and the rudder trim knob. Below the yoke is the ignition switch and parking-brake lock, which requires the brakes to be applied and then the knob turned clockwise to engage.

Graham talks me through the checks and I start the engine. The maximum revs recommended for taxiing is 1,200, which gives a





The curved cabin roof and dorsal fin fillet are the main visual signatures of the new GT.

▲ good taxiing speed without needing too much braking. Checks are done at 2,000 rpm and include exercising the prop down to 1,500 rpm, then with everything in order we line up on Biggin Hill's huge runway. Smooth application of power gives a brisk acceleration to rotate at 75 knots and once cleaned up we settle down to 95 knots, cutting the engine back to 25/25 for a cruise climb.

At 2,400 feet I set the normal cruise power of 24/24 and, when Graham is happy that we are clear of the TMA, we climb up through the cloud on autopilot to find some sunshine at 5,400 feet.

Given that the airframe is basically the same as the older version I had assumed there would be no surprises from a pilot's point of view. The obvious difference between this aircraft and the older version is the roll control. The fancy wingtip fairings

make the ailerons noticeably lighter and more effective and I find it a much more enjoyable aircraft to fly. Even flying formation is relatively easy, the main problem being reining in all the power to stay with the Tampico we use as a camera ship. I seem to be spending most of the flight with the low throttle setting/undercarriage warning horn screaming at me.

Much has been written of the exemplary low-speed handling of this aircraft, with test pilots having their various tricks to show this, including the high-alpha manoeuvres normally seen at airshows. Graham's simple but effective way of showing it off is to get me to do a normal power-off stall with gear and first stage of flap down and the prop still set at 2,400 rpm. At 65 knots, with the yoke right back, the only evidence of a stall is a nodding of the nose, so Graham tells me to hold that attitude and apply power. I reset cruise power

and the aircraft simply climbs away as if nothing has happened. It is difficult to imagine an improvement on the docile low-speed handling of the previous model, but this is very much better again and is likely to withstand all but the most ham-fisted attempts to persuade it to stall or spin.

So, how do these two aircraft, seemingly identical but separated by almost twenty years, compare? The old version left me with the impression of an aircraft which was very good at its job as a long-distance IFR tourer, but as a flying machine I found it uninspiring, heavy and lacking manoeuvrability. The new one will please all those owners who want more headroom, but more to the point, I enjoyed flying it. The Trinidad has always been an aircraft to go places, now the new one will do everything the old one did, in better comfort and be more fun to fly.

**Socata have always aimed for car-like comfort with the TB series. Rounded roof—together with lower rear seats—now gives headroom to match width. Refinements include bigger baggage door and retractable fuselage step.**

The manufacturers claim that the decrease in weight and the cleaner lines give it an extra three to four knots, but I found no evidence of that. In fact, the figures taken from the flight manuals show it to be slightly slower and with slightly higher stall speeds. The decrease in empty weight, allied with a higher maximum weight, gives much more useful load, including an extra 33 lb baggage capacity. It is that rarity, a real four-people, plus baggage, plus full-tanks aircraft—and even with the optional extra rear seat-belt fitted, a realistic five-seater.

It may be possible to find a slightly faster aircraft in this class, but faced with a 600 mile trip, I think most people would prefer to get there a few minutes later in the comfort and safety which the Trinidad provides. †

