Pilot Flight Check: BRITTEN-NORMAN's Trislander (The 'Poor Man's' 727)

by BASIL G. MAILE / AOPA 176244

If, as some claim, two engines are better than one, how about three instead of two? The three-engine BN-2A Trislander is a growth version of the 10-place twin-engine Islander now used in over 50 countries. It incorporates more than 75% of the parts used in the Islander and is aimed at corporate aircraft operators and others who want considerable seating capacity, short-field capabilities, and comparatively low operating costs. PILOT staff photos

Of all the interesting aircraft around, the Britten-Norman Trislander alone can claim two unique features: (1) It is the only modern example of a trimotor piston-engine aircraft; (2) It is the only type-certificated aircraft in the world to have one of its piston engines mounted on top of the fin.

Just as the basic idea behind the Islander was as a replacement for the de Havilland Rapide biplane (seven passengers and pilot, 410 total horsepower, 120 mph), so the Trislander may be seen as a modern-day replacement for the Ford Trimotor.

All three aircraft—Ford Trimotor, de Havilland Rapide, Trislander—share certain characteristics:

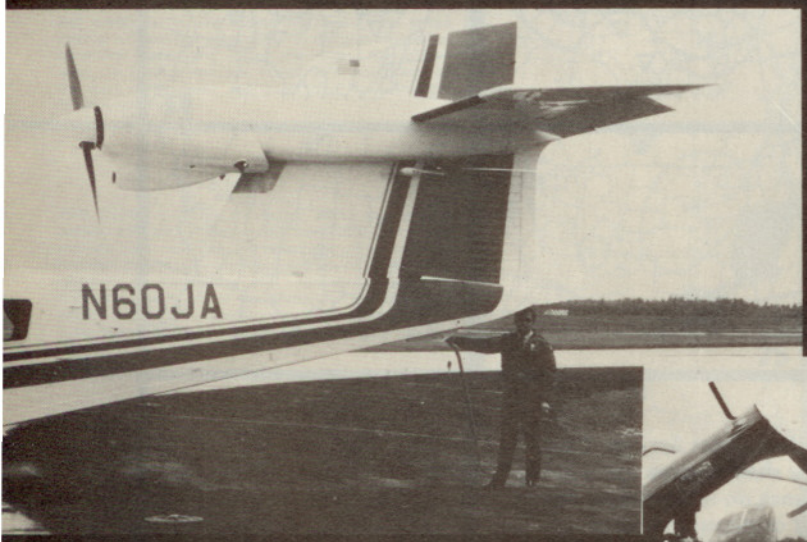
Economy of first cost and operation;
Simple,rugged construction;
Fixed gear for ease of maintenance; and
Good STOL characteristics.

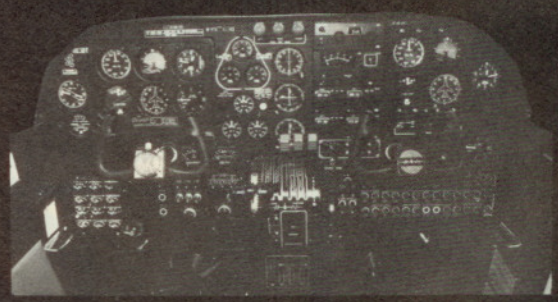
I had my first close-up look at the Trislander when it appeared in the static display and dropped parachutists during last year's Transpo 72 in Washington, D.C. The Trislander was grounded for a couple of days to incorporate a modification to the brakes and this gave me a long-awaited chance to fly it.

Paul Vandor (AOPA 321467), the company's demonstration pilot for the Trislander, checked me out and went along on the flight to keep me "honest." Paul is originally from Hungary. Following the Hungarian revolution in 1956, he migrated to the United States. His personal experiences are almost as colorful and interesting as the plane he now demonstrates.

With a cabin volume of 327 cubic feet and 30-inch spacing between the nine rows of seats, the Trislander has an 88% increase in passenger capacity over the Islander [July 1969 PILOT, page 36], with no sacrifice of passenger comfort. This has been achieved by inserting 90 inches of standard parallel fuselage section forward of the wing. The addition of the third engine on the redesigned fin, a slight increase in wingspan to accommodate the extra fuel tanks, and the addition of long-stroke shock absorbers to the landing gear legs complete the Trislander's transformation from the Islander.

Size of the fin-mounted third engine, and the overall aircraft, is accented by this shot of Britten-Norman demo pilot Paul Vandor (AOPA 321467).





The Trislander's cockpit area and panel layout are very similar to the Islander's. Note mixture controls are located at the top center of the panel.

Evaluator Maile signals thumbs up to indicate the three-engine Trislander compares very favorably with five basic competitors.

The walk-around inspection is straightforward. Points of special interest include the fuel drain for the rear engine (located under the rear fuselage), the rearview mirrors for the pilot (above the pilot's entrance door on the left-hand side), and the fact that you need to have a stepladder available in order to check for birds' nests in the rear engine.

THE COCKPIT—Generally similar to that of the Islander, the Trislander's cockpit is comfortable, with good visibility. (The rearview mirrors are for watching the third engine. CAA (Civil Aviation Authority) insisted on this feature before it could be certificated in Great Britain because of the potential risk of an engine fire going undetected.)

The control wheel is small and has a chunky feel to it. In order to avoid cluttering the pedestal, the mixture controls are located just below the top of the glare shield. Manifold pressure and rpm gauges are arranged in a logical triangular grouping in the center of the panel. The remainder of the engine temperature and pressure gauges are located below and to the left. Two unfamiliar features involve the location of the VOR/ILS indicator where the turn-and-slip indicator is normally found in the basic instrument panel layout. The turn-and-slip indicator is located more toward the copilot's side. A group of five red lights at the top left corner of the panel warn the pilot if any of the doors are open.

STARTING PROCEDURE — This is straightforward, with the magneto switches and auxiliary fuel pump switches located on the roof of the cabin. Although it is possible to taxi the aircraft using only the top engine, it should be borne in mind that this engine has no generator to charge the batteries.

TAXIING — With all the throttles fully retarded, the Trislander rolls at a comfortable taxiing speed on the level. When I flew it, the nosewheel steering seemed heavy and unresponsive at first; however, I gained confidence with a minimum of familiarization and thus was able to spare the brakes.

TAKEOFF and CLIMB—In our lightly loaded condition (two pilots, one passenger, and no baggage), we accelerated rapidly and rotated at about 70 knots. At 85 to 90 knots we were indicating approximately 1,200 fpm. Raising the flaps produced a slightly nose-down change of trim with some tendency to sink. This situation was corrected with the use of the extremely sensitive trim control wheel, which is mounted on the pedestal just below the throttles.

CRUISING FLIGHT—At 3,000 feet with 24 inches manifold pressure and 2,400 rpm, we cruised at an indicated 135 knots. The noise level was low. The elevators and rudders felt sensitive, but the ailerons felt sluggish and required a fairly firm movement of the wrists.

STALLING—We stalled the aircraft in various configurations. With half flap and moderate power, the nose hung at a very steep angle while the airspeed decayed to around 45 knots. Recovery was normal. In the full-flap condition, there was a marked tendency for the right wing to drop. We flew from Dulles International Airport in the Washington, D.C., area to Frederick (Md.) Municipal Airport and shot a couple of full-stop landings. On the approach, at 80 knots or higher, the glide felt comfortable both with and without power. If the speed is allowed to drop to 70 knots, however, it is advisable to maintain some power. If you don't, the aircraft settles rather rapidly. We

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Britten Norman BN—2A MK. III Trislander

(Specifications and Performance)

Seating capacity	18
Powerplants (3)	260 hp Lycoming O-540-E
Wingspan (ft)	53
Length (ft)	43.75
Height (ft)	13.58
Wing area (sq ft)	337.0
Wing loading (lb/sq ft)	27.75
Wheel base (ft)	20.73
Gross weight (lb)	9,350
Empty weight (lb)	5,638
Useful load (lb)	3,712
Fuel capacity (gal)	193
Takeoff ground roll (ft)	1,150
Takeoff roll (ft, over 50-ft obstacle)	1,800
Landing ground roll (ft)	830
Landing roll (ft, over 50-ft obstacle)	1,490
Rate of climb (fpm, sea level, three engines)	1,120
Rate of climb (fpm, sea level, two engines)	400
Service ceiling (ft)	14,500
Engine-out ceiling	10,000
Stall speed (mph, gear and flaps down)	56
Top speed (mph)	187
Cruising speed (mph, 75% power, optimum altitude)	180
Range, cruise (mi, 75% power, optimum altitude, no allowance)	1,000
Base price (faf)	$250,000
(equipped with IFR electronics)	$277,000

Trislander

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landed normally on the main gear. The rapid lowering of the nosewheel onto the runway from the pilot's perch of about six feet up reminded me of the sensation of being on the downswinging end of a teeter-totter. Directional control on the rollout was no problem.

After a brief stop for lunch at Frederick and some photography, we took off again and flew the pattern to make another full-stop landing. In spite of a stiff crosswind, the "crabbed" approach was easily straightened out, with only a moderate application of the rudder, as the main gear touched the runway.

Next we tried a maximum performance takeoff. Rotating at approximately 60 knots, we were airborne by the time we reached the first taxiway on Runway 23 (approximately 200 yards). On the way back to Dulles we simulated the loss of an engine. Asymmetric flight was no problem, requiring only slight use of the rudder trim, while the loss of the rear engine was barely detectable with almost no tendency to pitch nose up due to the incorporation of three degrees of down-thrust in the rear engine.

The landing at Dulles was made with only half flap and an approach speed of 100 knots. The flareout was a much more deliberate affair than on previous landings and the nosewheel touched down with barely a thump.

CONCLUSIONS—At less than half the cost of its five nearest competitors (Fairchild Metro, DHC Otter 300, Saunders ST-27, Short Skyvan 3 and Beech 99), the Trislander, at a basic price of $250,000 ($277,000 equipped the way the model was that we flew) compares very favorably on all counts, especially from the point of view of economical maintenance in the field. □

THE AUTHOR

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