

PILOT FLIGHT CHECK:

THE AEROSTAR 600

One of the more novel airplanes around offers a formidable balance of speed and style

■ ■ An Aerostar is still a relatively rare bird on most airfields, and yet it is immediately identifiable.

Designed a decade ago, this light-twin line has evolved as one known for sleekness, quality, and fashionable design.

Does the Aerostar live up to that reputation? It's fast, substantially built, and nice to look at. So, at a quick glance, the answer's yes.

The PILOT decided to look more in depth at the Ted Smith Aerostar 600, the company's basic offering—a six-place, nonturbocharged craft that has been around in basically the same exterior configuration for 10 years. A number of unique features characterized the airplane when it was introduced in 1966—and still, 10 years later, set the craft apart from most light twin competitors.

As far as appearance goes, there is nothing that compares to the Ted Smith design. (Smith, by the way, was the designer of the Aero Commander twin in the late 1940s—another pace-setting design.) With its extended snout, mid-fuselage wing, narrow vertical stabilizer and air-stair door, the Aerostar has a truly unique profile.

Second, when you buy an Aerostar, you buy a completely equipped airplane not an airframe/engine combination that must be favored with thousands of dollars of options to make it airway-worthy.

And third, the Aerostar is the fastest airplane in its class—the nonturbocharged model specifications reporting a gross-weight top speed of 260 mph and a 70% cruise-power speed of 250 mph. Two Lycoming IO-540 engines, rated at 290 hp, power this aircraft.

Such speeds result primarily from the very sleek shape of the Aerostar. Its thin wing, a laminar flow airfoil, has 170 square feet of area, less than that of the wing of a Cessna Skyhawk. Its fuselage is of thick stressed aluminum construction, which gives it a particularly

wrinkle-free finish. And when you bang on the side of the plane, it “thumps” rather than rumbles.

Despite its speed, the airplane is not hard to fly—only fast. Pull up and the craft goes up—fast. Yoke forward and the Aerostar will go down—fast. Particularly impressive is the way the 600 grabs and holds an altitude when its nose is leveled. No floating upward as it picks up speed after a climb. No sinking when the speed settles back after a fast descent. In general, a light control touch will go a long way.

Of particular note are the engine-out characteristics of the Aerostar. A simulated engine failure while the powerplants are at a high cruise power is almost undetectable by the tried-and-true means. Twin-engine aphorisms like “dead foot, dead engine” or “foot back, throttle back” mean nothing. The only sensory perceptions of engine failure are a slight change in cockpit noise, a very gentle turn toward the lost engine, and the smallest bit of variance in rudder pedal alignment. If the engine were lost in clouds, autopilot on, and voices coming out of the radio speakers, the failed engine would go unnoticed until your speed dwindled and you started reviewing some of the other instruments on the panel.

At slower speeds, loss of an engine has a more traditional feel, the plane will yaw into the dead engine—a condition easily correctable with rudder trim. Many light twins are criticized for their insipid performance on one engine. Certainly not so with the Aerostar. During an ILS approach with one engine throttled back to zero thrust, it required gear, partial flaps and reduced power on the operating engine to follow the needle down. When cleaned up for a missed approach, the plane being flown departed the pattern at about a 600 fpm rate of climb—on one engine. The owner's manual reports a single-engine service ceiling at max gross weight of



Shark-like snout and mid-fuselage wing offer a distinctive, clean profile to Ted Smith's Aerostar. Photos by the author.

6,600 feet, while the two-engine service ceiling is said to be 21,100 feet.

Once an engine is feathered, it must be electrically restarted. There are no accumulators in the prop governors to rotate the blades out of a feathered stop. In the unfortunate circumstance that both engines come to a halt, Aerostar's maker claims a 13:1 glide ratio—25 miles of glide from 10,000 feet—more than a Cessna 150.

The Aerostar 600 checked-out for this article was one recently delivered from the Santa Maria, Calif., manufacturer to Alpha Aviation, located on Stallings Field, Kinston, N.C. Alfa is one of eight Aerostar dealers in the U.S. The aircraft had less than 40 hours' total time and was beautifully built and painted.

But even in its short operating life, it had acquired several minor trouble spots that revealed themselves as the craft was being checked. Among them:

the landing-gear warning horn stopped functioning; the fuel flow gauge failed; the parking brake wouldn't work; extraneous noise occasionally emanated from the radio speaker; and the elevator trim indicator kept sticking. Which all goes to prove a long-known fact: no new airplane is perfect, and this one seemed to have its share of imperfections.

Fortunately, the Aerostar has a lot going for it to balance any minor deficiencies. Inside the cockpit, the panel is clean and functional. Switches and controls are logically clustered, and there is a general feeling of simplicity that pervades the cockpit. You'll find, however, that the standard "T" grouping of instruments is altered. Altimeter and vertical speed indicator are to the right of the two VOR indicators on the flight check aircraft, and the owner's manual depicts that arrangement as standard.

Fuel management is particularly basic

—each engine has a control, next to its magneto switch, with three positions: off, on, or X-feed. Fuel is carried in three interconnected tanks; two wet-wing tanks with 66.5 gallons each, and a 44-gallon fuselage tank located just behind the rear cabin bulkhead. When the fuel selectors are in the "on" position, fuel flows from all three tanks simultaneously. By selecting "X-feed" for an engine, fuel flows from the opposite side to that engine. Thus, all fuel can be used in the event of an engine failure, and judicious use of the crossfeed can assure lateral balance as the fuel load burns away.

Note: Refueling this unique tank arrangement demands close monitoring by the pilot. The fuselage tank must be filled before the wing tanks, an instruction found far back in the aircraft owner's manual. If a partial fuel load is desired, the fuselage tank gets filled



THE AEROSTAR 600 continued

first and the balance of the desired fuel load is then divided equally between the two wing tanks. Such a process might pose an insoluble mathematical proposition for some lineboys, and thus watchfulness by the pilot is quite in order.

Another quirk of the Aerostar is that it has no stall warning indicators. Neither light nor horn announces the incipient stall. Instead, the FAA, in its certification, concluded that the craft gives enough of an aerodynamic warning, and no device-type indicator was required. A stall out of 5,500 feet, gear down, full flaps, came at 82 mph indicated, a speed with power off that calibrates (correcting for airspeed indicator error) to about 75 mph. There was nothing particularly unique about the stall characteristics of the plane; it buf-

feted a bit, and with application of power and a lowering of the nose, the craft flew right out of the stall with no loss of altitude.

On the ground, another uniquely Aerostar device takes on importance. Nosewheel steering is done with a rocker switch on the lower panel, leaving pedals for rudder operation only. Pushbutton steering offers a tremendous tactile sense of power—moving a 5,500-pound machine around with the touch of a finger. It doesn't take long to get used to, and differential breaking is also available to tighten the turn.

It's essential, obviously, to assure that the nosewheel is lined up with the runway center line before takeoff roll. When power is added, rudders become effective quite early in the roll (engines set close-in assure a good breeze blowing by the vertical stabilizer). Recommended takeoff flaps of 20 degrees put the plane



AEROSTAR 600

Specifications

Engines	2 Lycoming IO-540-K1F5, 290-hp each
Propellers	2 Hartzell, three-blade, constant speed, full feathering
Wing span	34 ft 2 in
Length	34 ft 9.7 in
Height	12 ft 1.5 in
Wing area	170 sq ft
Wing loading	32.4 lb/sq ft
Passengers and crew	6
Empty weight	3,650 lb
Useful load	1,850 lb
Gross weight	5,500 lb
Power loading	9.5 lb/hp
Fuel capacity	177 gal (174.5 usable)
Oil capacity	24 qt
Baggage capacity	240 lb (30 cu ft)

Performance

Takeoff distance	1,008 ft
Takeoff over 50-ft obstacle	1,400 ft
Rate of climb	1,800 fpm
Single-engine rate of climb	450 fpm
Maximum level speed	260 mph (226 kt)
Cruise speed (70% power, 10,000 ft)	250 mph (217 kt)
Economical cruise (55% power, 10,000 ft)	225 mph (195 kt)
Range (65% power, 45-min reserve)	1,408 sm
Service ceiling	21,100 ft
Single-engine service ceiling	6,600 ft
Stall speed (gear and flaps down)	77 mph (67 kt)
Landing distance	722 ft
Landing over 50-ft obstacle	1,950 ft
Price	\$145,500

In flight over the Pamlico River in eastern North Carolina: cockpit well forward of the wings, plus overhead windows, allows unlimited visibility up or down.

in the air quite definitively with rotation at about 100 mph (single-engine control speed is 97). With 10 degrees of flaps, more muscle is required for rotation, and the transition from runway to climb tends to be less elevatorlike. Take-off ground run is listed at 1,008 feet at full gross weight.

Throttles go full forward on takeoff—and stay there until you are ready to stop climbing. There are no limitations for the throttle setting, even at prop redline of 2,575 rpm.

Climbing through 4,500 feet and maintaining an indicated airspeed of 175 mph, the rate of climb needle was pegged at 1,200 fpm. Passing 7,000 feet with 165-mph indicated, the craft still was climbing at 900 fpm. At best rate of climb speed, 140, the 600 would rocket upward at over 2,000 fpm. (With me and Duane Eisenhauer, chief pilot for Alfa Aviation, aboard, and full fuel,

the flight was initiated with the AeroStar 600 at about 300 pounds under its maximum gross weight. With full fuel, 1,047 pounds, and oil, 45 pounds, it could carry a cabin load of 651 pounds, or three standard aircraft occupants and 141 pounds of baggage.)

Noise levels can be high in the front part of the cabin. A reduction of rpms from 2,500 to 2,400 made a significant reduction in interior noise, though it was still at a significantly sonorous level.

Leaning for cruise at 9,500 (temperature 25° F) full throttle showed 21.5 inches mp at 2,250 rpm, which gives about 62% power. With those numbers, the airspeed indicated 201 mph, or 234 true. Interpolation from the owner's handbook shows one should expect a speed of 235. Close enough.

At that speed and altitude, the book calculates that 28 gph of fuel are con-

sumed. Our fuel flow gauge (it quit the next day) showed each engine draining 15 gph.

For a more economical flight you could keep the same altitude, lean way back at 19 inches mp and 2,100 rpm, and hold a true airspeed of 205 mph, burn between 19 and 20 total gallons per hour, and travel over 1,800 miles. That's what the book says. The speeds are right—the range (no reserve), you'll have to try for yourself.

On commencing a flight the next day, rain was pouring out of a low stalled along the North Carolina coast. Once situated in the pilot's seat, a lowering of the top half of the air-stair door proved to be a dampening experience. A minicascade dribbled through the top of the door on to the pilot's left leg and shoulder. That door, by the way, is the only door for the cabin. It is close enough to the left prop arc that a left

engine shutdown is required for safety when coming and going from the cabin.

With the top part of the door open, a seated pilot could conceivably reach out and back with his left hand and find it within the prop arc—a definite hazard to be wary of.

Also, the pilot must be last in and first out, so his seat can slide forward for access to the copilot's seat and the roomy cabin. Leather is standard for all six seats and cabin siding.

No windshield wipers grace the Aerostar, and pouring rain on the plexiglas made taxiing an exercise in vigilance, tracking the yellow line.

Intermittent heavy rain and moderate turbulence, however, proved of little flight discomfort as the 600 carved its way through the glop. With a 4G allowable flight loading, the yellow arc starts at 248 mph, and the airspeed redline is at 278. So at normal cruise speeds you've still got plenty of latitude to allow for bumps. Nonetheless, with the high Aerostar speeds, rain can do a quick job on leading-edge paint. Even on our flight, some paint was scoured off the prop governors.

Both gear and flaps are hydraulically operated, with the hydraulic pump on the right engine (one is optionally available on the left engine also). Both gear and flap controls were quite tight on this airplane since they directly operate hydraulic valves. A simulated failure of the right engine means the flaps are now immobile, and emergency-gear-down procedures (it is a simple, free-fall system, no cranking or pumping) are in order. Brakes are independent of the gear and flap hydraulics.

Aerostar N90496 came from the factory equipped with six options worth about \$12,000. The two big ones were a Mitchell Century IV autopilot (\$7,850) and an electric prop deicer (\$3,080). A full King Radio Silver Crown package is standard on the airplane and includes dual nav/com, DME, ADF, marker beacon, glideslope, and transponder.

The four other options on the plane were an alternate static system, synchronous tach, top-mounted rotating beacon and wing ice-detection light. The airplane's total cost came to \$157,788—with almost everything except radar. (The ADF and transponder are installed to the left of the pilot yoke to leave room for a weather radar screen in the radio stack.)

Though the Aerostar of 1976 looks the same as its 10-year-old predecessor, company president Ron Smith reports over 1,000 changes have been made on the craft since 1973, when his company put Aerostars back in production. Among the improvements this year are the addition of dual cabin speakers, alternator failure lights, a transducer fuel-flow system, extended pilot-seat track (the seat will slide forward an additional seven inches), standard front-seat shoulder harnesses, low-fuel-warning light, sunvisors, hour meter, and added latches on the baggage door. The basic airframe is guaranteed for five years or 3,000 hours of flight time.

The company expects to build a total of 105 airplanes during the 1976 calendar year. The largest number, 65, will be pressurized 601Ps; another nine will be the turbocharged 601; and the balance will be the normally aspirated Model 600. If there's to be a six-place twin in your future, the Aerostar would seem well worth a close look. □



Pilot seat slides farther forward for '76, simplifying access to the rest of the cabin.

Panel, simple but nonstandard. VOR indicators break up the standard "T"-grouping of flight instruments.

