



Photos by author

PILOT FLIGHT CHECK:  
**Piper's Turbo  
AZTEC F**

"... A flying machine of character"

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■ ■ Mention the Aztec and pilots start throwing out adjectives like "docile," "forgiving," "easy-handling," and "work-horse."

In an aviation age of super-critical wings and laminar-flow airfoils, the Piper Aztec is somewhat of an anomaly: It has a fat wing (more kindly referred to as a "high-lift" wing) and an almost 20-year-old design. Yet, still widely accepted, it's a mainstay of Piper's Lock Haven, Pa. plant and an exceptionally popular twin in the used plane market.

Last year the Aztec received a face lift. Now as the Aztec F, it flashed a new nose, redesigned tail feathers, and further interior and exterior mutations.

Still, the Aztec remains a good example of the kind of trade-offs that are involved in the creation of machines



With optional tip tanks, external fuel gauges are found on each wing to aid in adding measured amounts of fuel.

PIPER AZTEC continued

that move through the air. The Aztec exchanges speed for lift; beauty for utility; maneuverability for stability. But the trade-offs pay off, and the result is a flying machine of much character.

Checked out for this article was Aztec F N62689, a 1977 Piper demonstrator that was turbocharged, and included virtually every significant option available for the airplane. Stuck in the panel and the avionics rack were 21 avionics components, including Collins Micro Line nav/coms, Bendix weather radar, and King area navigation and telephone. A full complement of flight instruments and gyros was on the copilot's panel (Piper says this is the only light twin with full dual instrumentation capability). And price for the aircraft, computed at 1976 rates, totaled \$177,634. Base price increase for 1977 is 6.8%, so a current figure for this aircraft could be expected to come close to \$190,000.

A little surprising, perhaps, is the ease of access and clarity of arrangement of the array of flying aids loaded into this

red, white and blue bird. In the past year some relocating of the instruments and switches that confront the pilot has taken place, and there really isn't much to fault.

In using this airplane, I found double—and sometimes triple—redundancy in many of its operating systems. Some examples include wheels that can be lowered by three ways; five different indications to assure the gear is down; two completely separate pitot-static systems (pilot and copilot side) plus alternate static air (an option); three locking mechanisms on the cabin door; and a slaved gyro compass which would operate off either of two slaving compasses, or permit manual setting in the old-fashioned manner. It would seem Piper has taken a big step toward building the idiot-proof airplane (including dispensing with a capability to lock flight controls).

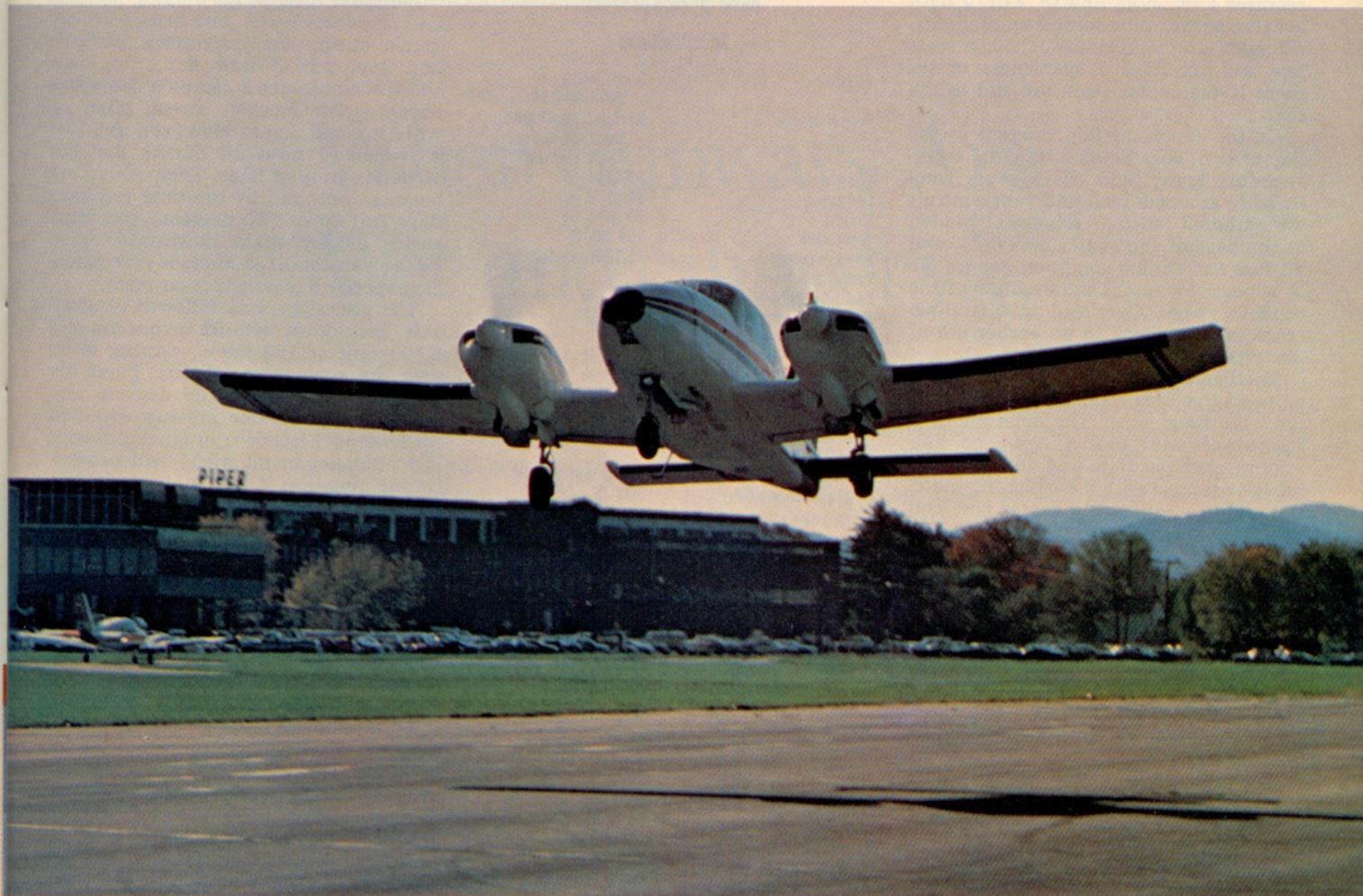
Combine the functional arrangement of the craft's controls, its many fail-safe systems, and its mild manners in the sky, and the Aztec's reputation for being docile and forgiving becomes well-earned.

Flights in the new "F" were made from Lock Haven; a first flight on an autumn day with miserable Pennsylvania mountain weather, and a second on a clearer, crisper occasion.

Over the years the Aztec has lost its pug-nosed look to become longer and sleeker. The F model's long snout, broader stabilator, and more squared wingtips have changed the craft's profile from that of its predecessors. A walk-around of N62689 revealed small external fuel gauges for each of the outboard tanks to permit fillups to a specified amount. These tanks each were connected to optional tip tanks, offering an extra 20 gallons on each side. The external gauges (flush on the wing) come with the optional tanks, at a total option cost of \$1,630.

Other features on the craft included anti-icing fuel vents, steerable taxi light on nose wheel (in addition to the snout-mounted landing light), ice inspection light (optional \$70), ice protection shields on fuselage sides (optional \$240), and oil quick drains (no uncowling necessary for oil changes). Pilots who've searched all over the belly of a plane for its fuel sumps will appreciate the Aztec: All three drains on each side (two tanks and a strainer) are grouped in one compartment in the engine nacelle, conveniently located and easily found. The rear baggage door is huge (almost 3-foot square), and there's an opening from that baggage area under the rear seats to allow placement of long objects (skis, golf clubs and so forth) on the floor without removing seats.

The six-seat cabin is entered through the one right-hand door, though the window adjacent to the left, center seat serves as an emergency exit. The right front seat slides forward for access to the middle seats. Getting to the third row



Recontoured wingtips give the Aztec F a more contemporary look.

Row of engine gauges at top right of panel starts with two fuel gauges that automatically switch to whichever tanks are selected. Right side of panel sports full set of flight instruments.



Rectangular stabilator with external mass balance weights results in, says Piper, lighter control forces.

## PIPER TURBO AZTEC F

Basic price \$123,485

### Specifications

Engine	2 Lycoming TIO-540-C1A
Propeller	Hartzell, two-blade, constant speed, 76-in diameter
Wing span	37 ft 4 in
Length	31 ft 2 in
Height	10 ft 1 in
Wing area	207 sq ft
Wing loading	25.1 lb/sq ft
Passengers and crew	6
Empty weight	3,188 lb
Maximum zero fuel weight	4,500 lb
Useful load	2,012 lb
Gross weight	5,200 lb
Power loading	10.4 lb/hp
Fuel capacity (standard)	144 gal (137 usable)
Fuel capacity with optional tanks	184 gal (177 usable)
Oil capacity	12 qt per engine
Baggage capacity	300 lb

### Performance

Takeoff distance (ground roll)	945 ft
Takeoff over 50 ft	1,695 ft
Rate of climb	1,470 fpm
Single-engine rate of climb (sea level)	225 fpm
Maximum level speed (22,000 feet)	215 kt
Normal cruise speed (75% power, 10,000 ft)	182 kt
Economy cruise speed (65% power, 10,000 ft)	171 kt
Range at normal cruise (with 45-min reserve)	945 nm
Range at economy cruise (with 45-min reserve)	1,005 nm
Service ceiling	above 24,000 ft
Single-engine absolute ceiling	17,000 ft
Stall speed (gear and flaps down)	60 kt
Landing distance (ground roll)	670 ft
Landing over 50 ft	1,310 ft

requires a bit more finesse, with a tight squeeze between the second set of chairs. All seats are comfortable, though seats five and six have a sparseness of leg room if the center seats are slid to the rear.

On the panel, the flap gauge is by the flap switch, gear lights are by the corresponding lever, light controls are comfortably grouped, heat and vent controls are gathered (though somewhat hidden at the base of the center pedestal), and all fuel and engine condition gauges are in a neat row under the eyebrow of the copilot's panel. Overhead is a trim-tab crank, a throwback to an earlier era of Mr. Piper's Pipers.

Another throwback is the protrusion of two large steel frame sections along the windshield sides. The Aztec cabin is formed of steel tubing, with an aluminum shell surrounding it. The steel tubes (wrapped with a cushioning material), plus a windshield center post and a fairly narrow vertical opening, tend to limit the forward view. Large side windows permit nice out-and-up looking; downward views are partially blocked both by wing and engine.

Each of the Lycoming 250-hp fuel-injected engines started flawlessly on every occasion, cold or hot. Run-up was simple, with throttle and prop gauges of the round, overlapping-needle variety. In fact, four dials fulfilled all power setting needs: rpm, manifold pressure, fuel flow and exhaust gas temperature. Each dial contained both engines' needles, eliminating unnecessary scanning.

Throttles full forward for takeoff—and they can stay there until you reach cruising altitude. Turbochargers in this airplane are completely automatic, allowing no participation on the part of the pilot. At full power on takeoff from Lock Haven's 550-foot msl field, the gauges showed about 38 inches mp and 2,500 rpm.

To save wear and tear on both engines and ears, it's normal to drop back on the power after departure. Robert Yoder (whose Piper title is manager, marketing product planning) suggested about 33 inches mp and 2,400 rpm. Passing through 2,000 feet and holding 110 knots, the climb rate steadied at about 1,200 feet per minute. The aircraft, with almost full fuel aboard (177 gallons), was about 200 pounds under gross weight with two of us on board, and no cargo to speak of. A full fuel load left a payload capability in N62689 of 558 pounds.

The balance of this flight was almost solidly in clouds and moderate rain. We had filed for a roughly triangular round-robin flight that would cover a good chunk of Pennsylvania.

Leveling at an assigned 10,000 feet, throttles went forward to 34 inches at 2,400 rpm for a "turbo cruise" setting that calculated to somewhat over 75% power. There, with the outside temperature at 44° F, the indicator showed 175 knots, for a true speed of 207 knots (238 mph).

Intermediate cruise, or 75% power, came to 31 inches and 2,300 rpm and allowed a speed of 156 indicated, or 184 true (that counts out to 212 mph). This number exceeds by about 2 knots the published performance for the airplane.

According to Piper, the best you can do with the turbo Aztec, at 22,000 feet and maximum power, is 215 knots (247 mph).

The craft drinks gas at settings like these, using about 15 gph in each engine. To prevent an additional requirement for Middle-Eastern oil, 25 inches mp and 2,100 rpm is an economy cruise setting that clocked about 155 knots or 178 mph. At that speed, using about 22 gph, we should have been able to travel over 1,000 nm (and have fuel for taxi, takeoff, plus a 45-minute reserve).

On the airspeed indicator, the caution range runs from 175-220 knots. So at the higher power settings the needle pushes the yellow. Maneuvering speed is 131 knots.

To get back to Lock Haven from the middle of clouds, one shoots the ILS at

Williamsport, and weaves his way 20 miles down a river valley (assuming one breaks out in VFR conditions).

No radar here, so it's holding patterns and procedure turns. The Aztec was very stable during the instrument let-down and approach. A new flap/trim interconnect eliminates a common complaint about earlier models: strong pitch up with lowered flaps. Now you get just a twinge of nose up during the first 10-degree drop of flaps. Then everything balances out, and by the time you have flaps full down (50 degrees) you experience a very slight downward pitch. Gear extension (132 knots is max extension speed) has no effect on pitch.

The glideslope was followed comfortably, gear down with 22 inches mp and 2,400 rpm at 120 knots, slowing to 80 over the runway end lights. I left the airplane trimmed for the descent, and found heavy elevator pressure required for landing. Electric trim (included with any autopilot installation) will neutralize the pressures if used judiciously during the roundout. Landings are glassy, even for the indelicate. Before landing, some planning may be required: The craft has a maximum landing weight of 4,940 pounds, 260 pounds under its max takeoff weight. Williamsport was marginal VFR under low clouds, so we took off again and putted back to Lock Haven.

A later flight on a better day permitted single-engine work, stalls, and some true aviating. A feathered propeller results in some yaw, but it's certainly not overwhelming. It can be fully rudder-trimmed away, even at slow speeds. Minimum single-engine control speed is 64 knots; at a safe altitude I found the Aztec would handle comfortably (although gently yawing) at speeds down in the 50s. At 88 knots, best single-engine rate of climb, the wounded bird would climb out of 3,000 feet at around 200 fpm.

With both engines again, the plane could be slowed from 160 to 90 knots (dropping hydraulically-operated gear and flaps as soon as allowed) in 30 seconds. Slowed even further, it stalled, power off, at 55 knots. Stalls were extremely mild with buffeting being about the only sensation before the craft began wallowing earthward.

For shortest takeoff, one of the Aztec's true fortes, full power and a sharp rotation at 70 knots got the Aztec airborne well within the first third of Lock Haven's 3,300-foot runway (temperature 60 degrees, no wind to speak of). Crossing the far end of the strip, the altimeter showed us 400 feet above the field elevation.

Surprisingly (for a new airplane), this Aztec performed flawlessly. Piper officials spent not one minute of their time apologizing for malfunctioning gauges or a radar that wouldn't blink.

But more importantly, taking the Aztec for a ride gave it a chance to speak for itself—an opportunity to show why, since 1960, Piper has rolled 4,216 Aztecs (as of August) through the big door at the end of its Lock Haven assembly line. □