



THE

Aztec has 7,400-foot single-engine service ceiling at full gross. N-4501P is first production airplane. Author used 4503P for accompanying article, says single-engine performance "will endear it to every pilot"

Bright future predicted for Piper's new light twin. Competitively priced, its performance on check flight from Washington to the Bahamas impresses editor of The PILOT

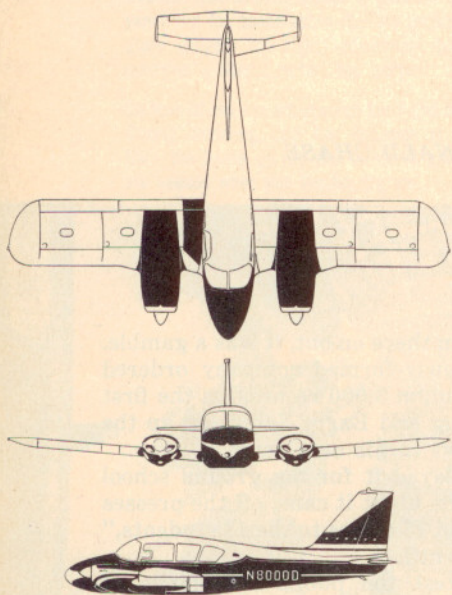
by MAX KARANT • AOPA 18

Sept. 18, 1959, should be one of the most significant dates in Piper history. That's the date the Aztec was officially certificated by the FAA under Parts 3 and 410 of the Civil Air Regulations. It's my guess that that date will mark the birth of one of the most popular and widely-used high-speed twins in the history of general aviation.

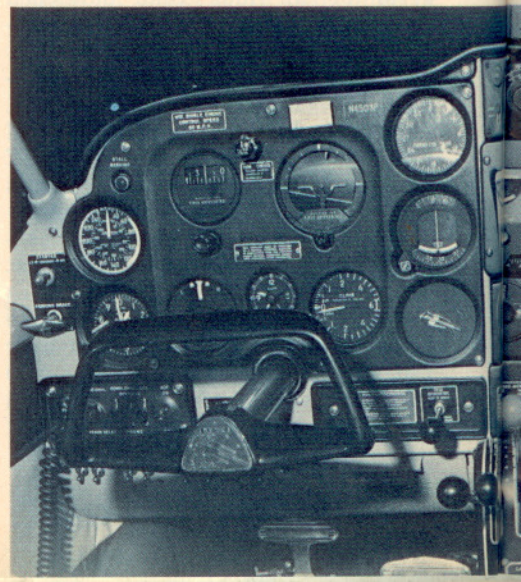
The Piper company turned over Aztec No. 5 to me on Jan. 14 and I returned it to them Jan. 23, after having flown it 22:20 from Lock Haven, Pa., to Florida, through the Bahamas as far south as George Town on Great Exuma Island, then back. In that comparatively short time one significant fact kept impressing itself on me: here I was, just a private pilot, ranging far and wide with the greatest ease and comfort, in a manner that is impossible to comprehend outside the United States. Here of course, even the smallest contemporary single-engine lightplane has opened vast new worlds of travel for the average man.

So here I was, in an airplane that literally would carry almost anything I could stuff into it—legally—cruising along at a true airspeed slightly

over 200 m.p.h., with a solid 1,000-mile non-stop range, enough performance to take it, fully loaded, twice as high as is safe to fly without oxygen, wandering about the hemisphere in a manner that used to be the exclusive prerogative of the professional pilot. For example, wheels off Washington, D. C. to wheels on at West End, Grand Bahama Island, took 05:57, for an average of about



"The Aztec is a big Apache, and yet it isn't," author says. It retains Apache's fuselage, wing and landing gear, has bigger engines. Most noticeable difference is its new "flying" tail, with fully moveable "stabilator"



AZTEC: An Evaluation

182. That includes an average headwind of 18 m.p.h., and landings and takeoffs at Charleston, S.C., and Ft. Lauderdale, Fla. The return flight took 06:30, with stops at Ft. Lauderdale and Jacksonville; an average headwind of 34 m.p.h. gave me a groundspeed of 166.

The owner of an *Aztec* in places like Washington or New York could easily load the ship with four passengers and 200 pounds of baggage, and fly non-stop to Bermuda in less than four hours—with an ample fuel reserve. An owner in Nashville could fly to San Juan, with one stop in Nassau, in 09:10. By adding a portable 100-gallon fuel tank in the cabin, two people and all their baggage could easily fly to Europe. Flying the route Boston-Gander-Santa Maria (Azores)-Paris, the longest hop would be about 08:20, an easy flight in an airplane as comfortable and quiet as the *Aztec*.

In my opinion, this is one of the most significant points about the *Aztec*: it is literally a global private plane. If we are to judge from the

way other U. S. private aircraft—most of them with more limited performance capabilities—are roaming the free world, it's virtually a sure thing that *Aztec*s with U.S. registration markings will be seen in some of the farthest reaches of the world within the next couple of years.

There is little of the usual "numbers game" in the *Aztec*. When Piper says this airplane carries five people, 144 gallons of fuel and 200 pounds of baggage, there's no "or" hidden in this. The *Aztec* I flew for this article—N-4503P—added up like this:

Empty weight	2,837 pounds
Oil	45 pounds
Fuel (144 gallons)	864 pounds
Five people (@ 170 pounds)	850 pounds
Total	4,596 pounds

Standard gross weight is 4,800 pounds, which leaves 204 pounds for baggage. So to say that the *Aztec* is truly a global airplane is no exaggeration. To fly clear around the world, the longest non-stop hop would

be between Hawaii and the U. S. mainland (2,400 miles). The two people I mentioned previously could fly that leg too, if they wanted to carry about a 300-pound overload—something the *Aztec* could do so easily the pilot could barely detect the difference. As a matter of fact, the *Apache* I flew to Paris (PILOT, Sept. 1959) carried a considerably greater overload with ease.

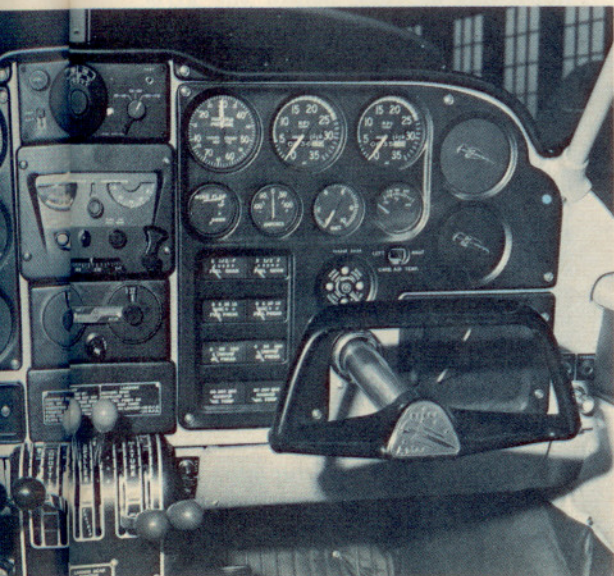
Of course, this is not to say that overloading any airplane is something to be done capriciously. The weight limit is there for a very good reason, and going over it increases the hazard considerably, should the

(Continued on page 56)

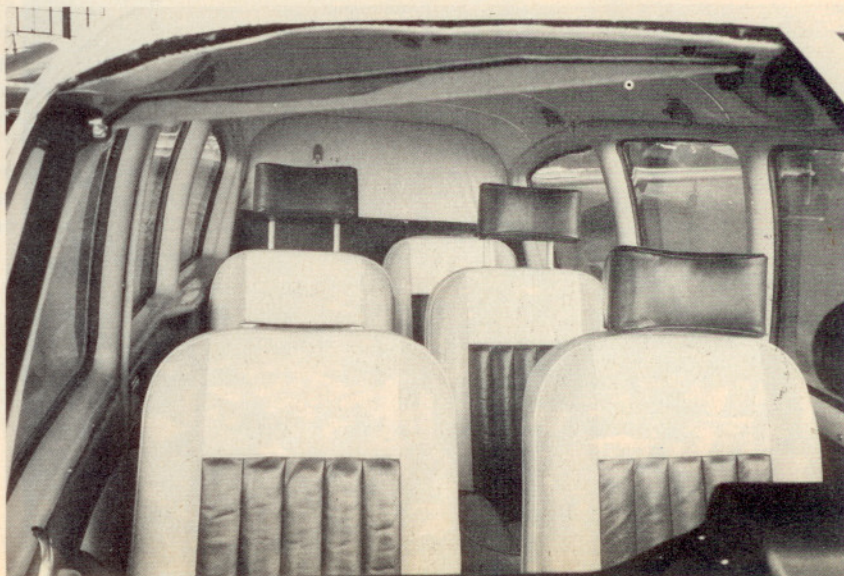


AOPA PRODUCT REPORT

Instrument panel of Zero Three Papa shows completeness of Autoflite *Aztec*. Radios in panel center are (top to bottom) Lear ADF-12E, Narco Mark II, Narco Mark V (whose omni indicator is to left of Mark II). Complete flight instruments are on left, engine instruments on right



Five seats (four with headrests) are standard equipment. Fifth seat is easily removable for baggage storage. Author says *Aztec* cabin makes it "one of the most comfortable airplanes I've flown in recent years"



Aztec Evaluation

(Continued from page 29)

airplane become involved in turbulent weather. Also, its single-engine performance is reduced in direct proportion to the amount of overload. So any pilot overloading an airplane in this manner must do so with the greatest care, and he must fly the airplane in carefully-chosen weather until he burns off enough fuel to bring the gross weight down to the specified maximum.

The *Aztec* is a big *Apache*, and yet it isn't. It is officially, on the books; the Piper model designation is PA-23-250. The PA-23 is the *Apache*; the "250" identifies the 250-h.p. Lycomings in the *Aztec*. Piper did this deliberately, to avoid having to go through 100% of the FAA red tape that goes with certificating a totally new design. On the other hand, though the *Aztec* is startlingly different from the *Apache*, it is just a big *Apache* to a great extent. The fuselage, landing gear, cabin and wings basically are the same; many of these parts are interchangeable. The engines, propellers and tail are different.

When I went to Lock Haven to pick up Zero Three Papa I expected to start from scratch to become familiar with the *Aztec*. Instead, the moment I climbed

into the cabin, I found myself in the old familiar *Apache*. Everything was in the same place, everything looked the same. So the flight check given me by Howard Graves, Piper's flight operations director, had to do primarily with the *Aztec's* flight characteristics, and one or two mechanical differences (like the prop-feathering mechanism). My first takeoff was the first time I saw the sharp contrast between the *Apache's* and *Aztec's* flight characteristics. You make sure your seat is locked in position, and your feet are firmly on the rudder pedals. Because, once you ease both throttles full forward, you're all but bracing yourself in the seat as the *Aztec* rockets down the runway. Single-engine speed is 80 m.p.h., and you reach that so fast you almost don't have to watch the airspeed indicator to make sure before easing back on the wheel. And once the gear starts to come up, the acceleration reminds you a bit of a jet. Best rate of climb is at just over 110 m.p.h., but I just arbitrarily decided to use 120, mainly because that's the climbing airspeed I use for my *Bonanza*. But even at 120, the *Aztec* always showed over 1,500 f.p.m., no matter what load I had aboard; Piper claims 1,650 f.p.m. at maximum gross. Piper's specifications call for these additional climb rates: 1,500 f.p.m. at 2,000 feet, 1,350 at 4,000,

1,200 at 6,000, 1,050 at 8,000, 900 at 10,000, 750 at 12,000 and 200 at 20,000.

Once you're in the air, the airspeed starts building up so fast you instinctively reach for the throttles in sort of a subconscious move to keep the ship from running away. The moment you get the gear up, you pull the engines back to 24 inches and 2,400 r.p.m. Then you trim the nose to 120 m.p.h. indicated and just sit there and steer it, keeping the manifold pressure at 24 inches at long as you can.

The most interesting item in the flight check was the single-engine performance. Graves first makes sure you can fly the airplane reasonably well. Then, on one takeoff, he unobtrusively reaches down and shuts off the fuel on one engine. He did this to me shortly after takeoff, about 800 feet in the air. While I don't particularly like losing an engine on takeoff, even for practice, what really bothers me is trying to figure out which engine is out before grabbing one of the engine controls. I have a horror of making the mistake made all too often—even by the professionals—of feathering the wrong engine.

So Howard killed the right engine when I least expected it. Instinctively, I corrected for the subsequent yaw with the flight controls. This time, however, to my surprise I found the airplane flew quite easily, just with the normal flight controls. So I took my time, made a few ill-chosen remarks to Howard, then carefully figured out which engine to feather. Then I cut off the fuel, pulled the right prop control back to feather position, cut the ignition, and flew on my way. I could have continued around the traffic pattern easily, without trimming the rudder. It only took a couple of turns of the rudder tab and I continued on course, climbing to 1,500 feet. Then I leveled off, reduced the left engine to cruising power—and cruised along for several minutes at 140 indicated! Such performance almost makes you careless. But Howard expected that too, because he insisted I fly the pattern exactly as anyone should with an engine failure, staying a little high until I was sure I had the field made, and not using flap until there was no question of my under-shooting. In any event, I predict this is one performance characteristic of the *Aztec* that will endear it to everyone, without exception. Incidentally, the *Aztec* has a single-engine ceiling of 8,800 feet at gross weight.

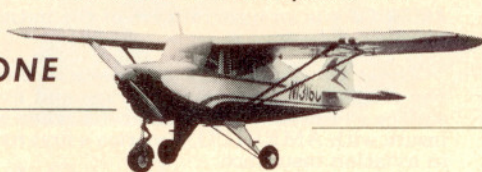
The newest thing on the *Aztec* is its tail, and this is really an innovation. It's called a "flying tail," with counterbalanced rudder and horizontal "stabilator." This stabilator is one complete movable unit that is moved by a long trailing-edge tab. Actually, the pilot controls the tab, and the tab controls the stabilator. This makes for unusually smooth and easy control of the airplane. In landings the excellence of this new tail is particularly noticeable. You come in slowly (pattern speed is 90), trimming the nose up as you come over the fence. Then you hold

THEY SAID— IT COULDN'T BE DONE

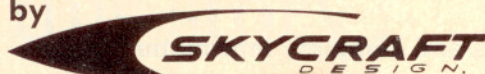
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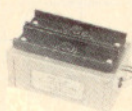
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AZTEC PERFORMANCE

(At 4,800 lbs. gross weight)

Top speed	215 m.p.h.
Optimum cruise speed (75% power @ 7,000 ft.)	205 m.p.h.
Economy cruise (65% power @ 9,000 ft.)	200 m.p.h.
Stalling speed (flaps and gear down)	62 m.p.h.
Takeoff run	750 ft.
Landing roll	900 ft.
Climb (at sea level)	1,650 f.p.m.
Single-engine climb (at sea level)	365 f.p.m.
Absolute ceiling	23,750 ft.
Service ceiling	22,500 ft.
Single-engine absolute ceiling	8,800 ft.
Single-engine service ceiling	7,400 ft.
Fuel consumption (@ 75% power)	28 g.p.h.
Fuel consumption (@ 65% power)	24 g.p.h.
Cruising range (@ 75% power)	1,025 mi.
Cruising range (65% power @ 9,000 ft.)	1,200 mi.
Cruising range (45% power @ 10,000 ft.)	1,400 mi.

SPECIFICATIONS

Engines: Lycoming O-540-A1B5,
250 h.p. @ 2,575 r.p.m.

Wing span	37 ft.
Wing area	207 sq. ft.
Length	27.6 ft.
Height	10.3 ft.
Wing loading	23.5 lbs./sq. ft.
Power loading	9.6 lbs./h.p.
Fuel capacity	144 gal.
Gross weight	4,800 lbs.
Empty weight	2,775 lbs.

the nose high, land on the back wheels, and continue to hold the wheel back. The *Aztec* rolls on its back wheels until the speed is well below stalling speed, then the nosewheel drops gently to the ground.

The big rudder and fin are just as effective. The whole tail makes this a much better short-field performer than even the *Apache*. To put it more specifically, I would say that I would not hesitate to operate the *Aztec* out of a single 2,000-foot strip with clear approaches, at maximum gross weight. In other words, any field into which you could safely operate a *Tri-Pacer*.

I used 75% power for all cruising. The power chart that comes with the airplane is a rather confusing table of figures, with computations shown for "standard air" conditions. You go to the altitude you want, then select the precomputed figures on the chart closest to your pressure (not indicated) altitude and outside air temperature. After that, you follow this instruction to get the actual power setting you should use: ". . . Correct manifold pressure approximately 0.17 inches for each 10° F, and variation in carburetor air temperature from standard altitude temperature. Add manifold pressure for air temperatures above standard; subtract for temperatures below stand-

ard." They could make it easier for the pilot by just giving him a sliding scale to set, with all the computational gymnastics worked out for him by the engineers.

At 75% power my true airspeed always worked out to between 199 and 203 m.p.h. Piper says the airplane should true out at 205 at this power, at 7,000 feet. Most of my cruising was at 8,000 or higher, which is above the engine's optimum altitude. So Piper's figures appear to be quite accurate.

I found only one major problem: fuel consumption. Both Piper and Lycoming say this engine should burn 14 g.p.h. at 75% power, leaned out. The closest I ever got to that was 14.6 g.p.h. on a flight from Grand Bahama Island to Great Exuma, via Nassau, and return. The rest of the time I averaged 15.5 g.p.h. Because the Lycoming manual indicates these engines should not be leaned below 5,000 feet, I flew one leg at 4,500 feet at full rich. At Ft. Lauderdale, after refueling, I found my average consumption was 17.5 g.p.h. per engine. Red Gamber (AOPA 79931) of Red's Flying Service there, a Piper distributor, advised me to lean these engines right from the ground up. He said everyone does with the same engine in the *Comanche*.

After that advice, I leaned the engines at all altitudes. Even so, my fuel consumption was enough higher than the claimed average to materially reduce the ship's range. The Piper people told me later that they've been changing carburetor needle valves in the first *Aztecs*, for this same reason. But after all, I was flying production airplane No. 3; I frankly expected more serious "bugs" than this one.

I should mention some other points that seem to me worth noting:

- The Lycoming manual, and the Piper operating manual, refer to leaning-out procedures based on cylinder-head temperature readings. The *Aztec* has no cylinder-head temperature gauges. I mentioned this to Howard Piper (AOPA 97315) and he acknowledged the point of confusion, pointing out that it's really not a problem because the engines in the *Aztec* run so cold that it's virtually impossible to hurt them in the manner implied by the Lycoming manual.

- The *Aztec* should have some sort of system with which to lock the controls when parked. The stabilator flying tail really flies in a wind storm; the only solution I could figure out was to lash the control column down with the seat belts.

- An auxiliary power outlet is needed (Piper offers it as optional equipment). Down on Great Exuma Island, where there's a coral runway and no service facilities of any kind, I carelessly left the master switch on overnight. It's easy to do, especially when you're new to the airplane; maybe they ought to have an "overnight check list". Anyway, the three little green landing gear lights ran the battery down to zero. Next morning, we hunted around until we found the battery in the

nose, unscrewed a large nose panel, then hooked up cable jumpers from a British Land Rover's battery to the *Aztec's* battery. Then, while they raced the Land Rover's engine to maximum charge on the generator, I started the left engine.

- I broke the tow bar too. Actually, it's of such light construction I think this bar is only supposed to be used to steer the plane, not actually tow it.

- Draining the sumps before each day's flying is a messy operation. They're down near each wheel well, inside a little door. If they keep this system, you're sure to get smeared with oil and dirt while doing gymnastics under each nacelle.

- Of more serious consequence is the stall-warning installation. Piper's eliminated the horn, leaving only the small light on the instrument panel. Personally, I feel this is dangerous, because under those conditions where the stall-warner can best prevent an inadvertent stall—flying low, in a traffic pattern—the pilot is invariably looking outside the airplane and not at the instrument panel. If he tightens up a turn while looking at the runway, he'll never see the warning light come on. Stall-warning should be either a horn or a stick-shaker, something the pilot can't accidentally overlook.

- In the arrangement of the radios in the panel, the Narco Mark V is directly under the Mark II Omnigator. I found that, in changing frequencies on the Mark V, I invariably bumped either the tuning knob or the track selector of the Mark II, knocking it off frequency or off track.

One question came up a couple of times during my trip with Zero Three Papa: what about that *Aztec* accident in which the tail "fell" off. To put a stop to that distortion early in the plane's history, a few brief facts. The tail didn't "fall"; it was torn. It was on the original prototype, and a test pilot was making high-speed dives and pullouts. A tab reportedly came loose on the tail, set up a massive oscillation so quickly that the whole tail was torn off. The tab was modified and the plane's been successfully dive-tested many times since.

The *Aztec* has three interesting features that differ from the *Apache*. The propeller-feathering mechanism, for one. During engine runup you must use a special—and careful—technique in checking the props. You take a firm hold on the propeller control, then pull it back into the feathering position and push it right back out again as fast as you can. Even so, the feathering mechanism works so quickly that, if your hand slips off the handle, you might well feather the engine while just checking it.

A second interesting feature is the fully controllable carburetor heat system. If you pull the handle out to the maximum you almost instantly get a heat rise of 185°, which ought to take care of any ice which might form in the carburetor.

Third of these features is the fact

that you can lower the landing gear at 150 m.p.h., a useful item in a busy traffic pattern.

What with the plush reclining seats and the AutoControl, the *Aztec* is one of the most comfortable airplanes I've flown in recent years. If anything, I'd be concerned about dozing off on a long, monotonous flight. Part of my flying in Zero Three Papa was done in sub-zero weather, and the Stewart-Warner heater can bring perspiration to the occupants even in that kind of weather. It's a gasoline-burning heater (one quart per hour), a fact that strikes me as incongruous, when you consider that the greatest single waste product coming from each engine is heat.

One of the most impressive "features" of the *Aztec* is its price. Zero Three Papa was an "Autoflite" model; there are two others: the standard, and super custom. Cheapest is the standard—\$49,500—and it includes everything in more expensive models except radio and AutoControl. Super custom (\$53,355) is the standard model with Narco Mark II, Narco Mark V with omni and Lear ADF-12E. Autoflite model is super custom with AutoControl, lists for \$54,105. Major *Aztec* competition appears to be the Cessna 310D and Model 500 *Aero Commander*.

Closest of these would be the 310D; gross weight is 4,830 pounds, the *Aztec* is 4,800. The *Commander* grosses 6,000 pounds, although it uses the same size engines. By adding optional equipment to the 310D until it closely matches the Autoflite *Aztec* I flew for this article, I came up with a price of approximately \$69,378. The same process on the Model 500 *Commander* gave it a price of \$71,580.

I flew Zero Three Papa twice on instruments, both times unexpectedly. Once I went on instruments and turned off the AutoControl to see how it handled manually. Although I didn't make an actual approach, it struck me as being an excellent instrument airplane. But with the AutoControl on, instrument flying is a breeze. As I pointed out in my article on the *Apache* flight to Paris, the AutoControl (which is a portion of the Mitchell autopilot specially-produced for Piper) is one of the greatest labor-saving devices short of a full autopilot that the pilot can have. Even the U. S. Navy will have it in the 20 *Aztecs* they just ordered.

All in all, the *Aztec* is not just a new model airplane. In my opinion it is one of the most significant products in Piper's history.

END