

# PILOT FLIGHT CHECK: **The Piper Lance**

Think of it as a Cherokee GT

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■ ■ Piper's Cherokee Six has always seemed a good plane compromised, as if its design team had been given *carte blanche* on the body but some stockholder's mother had gotten to build the gear.

The result was a roomy, fine-fuselaged craft, but one perched snout-high and stiffly, its wheels housed in war-surplus drop tanks.

Despite this awkward silhouette, the Six has been well received. Its half-dozen seats, commendable range, modest speed and commensurate price make it a fine family/charter wagon, the role it has played best. Piper has produced 3,115 such wagons since the Six was introduced in 1965 and might have happily left well enough alone.

But then came a beast named Agnes and a man named Lynn.

The former, a hurricane, destroyed \$20 million worth of aircraft and equipment at Piper's Lock Haven, Pa., plant in 1972. One important fatality was the Piper Comanche line, whose production tooling disappeared forever beneath the bloated Susquehanna River.

With the Comanche lost, Piper was without an aircraft to compete in the high-performance, single-engine market. This forfeiture has become increasingly significant recently, as rising avgas prices and lower auto speeds have placed such aircraft at a premium. As an indication of this market's activity, Cessna has doubled its 210 Centurion production since the time of the Comanche's demise.

Piper needed something. What it got was J. Lynn Helms, a straight-thinking, plane-smart executive who was voted its



president last year. Helms recognized the market void and figured that with a little reworking, Piper's station wagon could become a Cherokee GT.

The metamorphosis took ten years, but the retractable Cherokee Six is finally here. It's called the Cherokee Lance, and it's a comer.

Helms, in unveiling the Lance to the aviation press, predicted the new/old airplane would capture 25% of the high-performance single market during its first sales year. That's an ambitious goal—about 250 airplanes—but perhaps not an unrealistic one.

Listed at a \$48,300 base price, the





Photo by Don Downie.

Lance will most likely win the 1976 price war with the Centurion and Beech Bonanza line, its most direct six-place competitors. A more realistic price figure, however, is \$63,000—that's what Piper figures the average IFR Lance will go for.

Combine the Lance's price advantage with its 1,055-mile advertised range, its 182-mph cruise, 1,690-pound useful load, 2,000-hour-TBO Lycoming IO-540 powerplant, and the roomy old Six's record of durability, and you wonder why Piper waited this long to retract the gear.

Apparently early engineering studies

showed that retracting the gear would gain the Six a paltry 6 mph in cruise while costing dearly in dollars and load. Consequently the project was canned. But then came Helms. He said, "Do it," and so they did.

The major problem confronting Bill Barnhouse and his Vero Beach engineers was how to minimize power loss on the 300-horse Lycoming. This was achieved by redesigning the aircraft's induction and exhaust systems.

By mounting a forward-facing air scoop on the Lance's port-side cowl, the designers increased ram-air effect to the fuel-injector system and provided

the engine with cooler air, making it more efficient at altitude. Rework on the exhaust system minimized back pressure and also provided the Lance with an aesthetic bonus: three stubby stacks protruding from the forward starboard cowl.

These changes, combined with the disappearing gear, put the Lance's empty weight at 1,910 pounds, versus the Cherokee Six 300's 1,824. However, the Lance's gross weight went up to 3,600 pounds, versus the Six 300's 3,400 pounds. That's a 114-pound increase in useful load.

Furthermore, the cruise boost was not





The Lance's new gear gives the aircraft a near-level stance, aiding taxiing visibility and ridding the Lance of the Cherokee Six's snout-high silhouette. Photos by the author except as noted.

Overall panel layout is logical and readable. Special plaudits go to the fuel selector (located below the power quadrant) for its simplicity.

THE PIPER LANCE continued

the measly 6 mph earlier forecast, but rather a 14-mph increase over the cruise of the Lance's fixed Six brother (168 mph). The engineers had done their jobs well.

While ancillary engine modifications have aided the Lance's performance, the most important (and immediately apparent) difference in this newest 6/7-place Cherokee is its retractable gear. The two main wheels were plucked right out of the Seneca's parts bin, while the nose gear was donated by the Arrow. This new gear not only makes the Lance quicker, once airborne, but easier to taxi too, because it lowers the aircraft's nose-high attitude to a near-level one. The old Cherokee Six never looked better.

The Lance's designers also borrowed the Seneca's fuel-tank system, consisting of two tanks per wing with a total 98-gallon (94 usable) capacity. There's a single filler neck on each wing. Piper has added exterior fuel gauges for both





# PIPER CHEROKEE LANCE

## Specifications

Engine	Lycoming IO-540-K1A5
Propeller	Hartzell, 80-inch, constant-speed
Seats	6/7
Gross weight	3,600 lb
Empty weight	1,910 lb
Wingspan	32 ft 9 in
Wing area	174.5 sq ft
Wing loading	20.6 lb/sq ft
Length	27 ft 8 in
Height	8 ft 2 in
Baggage capacity	200 lb
Fuel capacity (usable)	94 gal
Oil capacity	12 qt

## Performance

Max speed	190 mph
Cruise speed, 75% power	182 mph
Stall speed (40° flap)	70 mph
Range, no reserve:	
75% power	1,005 mi
65% power	1,060 mi
55% power	1,120 mi
Takeoff:	
Ground roll (25° flap)	960 ft
Over 50-ft obstacle (25° flap)	1,660 ft
Landing:	
Ground roll	880 ft
Over 50-ft obstacle	1,670 ft
Rate of climb	1,000 fpm
Service ceiling	14,600 ft
Base price	\$48,300

inboard tanks to facilitate solution of real-life weight-and-balance problems.

Inside, the Lance is almost identical with its brother Sixes, or, put another way, is the same as a Seneca, but with fewer switches to contend with.

Top to bottom and side to side, the cabin is four feet square. No elbow-rubbing here. There's a narrow aisle between passenger seats in the center of the 13-foot-long shell, but the walkway disappears with the addition of an optional center-row jump seat.

When talk of the then-unseen Lance first circulated, one Piper salesman said he hoped club seating (i.e., middle seats facing aft, last row facing forward) would be offered as an option. Well, his wish didn't come about, which is really too bad. The Lance's school-bus arrangement of forward-facing seats makes for difficult movement into and within the aircraft. When that seventh seat is added, forget any movement at all.

The reclining seats themselves are firm, but comfortable enough for those four-hour cross-country legs. A vertically adjustable seat is available for both pilot and copilot, and is an absolute "must" for the former. It's about nine feet from your eyeballs to the spinner tip, so unless you're built like a Boston Celtics center you'll have to adjust upwards to see down over that nose.

Ventilation is quite good, and air-conditioning—a \$1,755, 70-pound option—is a blessing on those ohmygod summer ramps.

There are two luggage compartments, one in the nose and one behind the last two seats. While both are rated for 100

pounds, the forward one has just seven cubic feet of volume, while the aft compartment behind the last seats can swallow 20 cubic feet of miscellany. Remove the passenger seats and you've got a mini-freighter.

This year Piper has reengineered the main doors on all its Cherokees. The new door, containing half the parts of its predecessor, has a one-piece skin and a one-piece inner pane. The result is less noise and a tighter fit for a substantial reduction in air and moisture leakage.

Such improvements are commendable, but one problem I think still unsolved in the Lance and its brothers is not so much the type of door, but the number. There are only two: one at the copilot's seat and one beside the rearmost, port-side passenger. Why some lightplane manufacturers—Piper is not alone—are such skinflints with doors is a continual puzzlement. The paucity of doors can make passenger entrance to and egress from these aircraft an awkward, bumbling affair. It shouldn't be.

Panel layout for the Lance is logical and handy, with ample room to equip the most demanding and wealthiest of instrument pilots. The Lance we flew recently, N1594X, was equipped with dual nav/coms, ADF, DME, RNAV, transponder, switch panel, encoding altimeter, radar altimeter, HSI, EGT, dual glideslopes, TAS indicator, three-axis autopilot, and air-conditioning, among other things. There was actually room on the panel for more, but I'm not sure it's been invented yet.

These and other options, such as an ELT, soundproofing, a jump seat, and an adjustable pilot's seat, added 252.2 pounds to 94X's empty weight and raised the sticker price to \$81,320.

As equipped, 94X had a basic empty weight of 2,230.9 pounds, leaving a useful load of 1,369.1 pounds. If you subtract from this 564 pounds (94 gallons) of 100 octane and 22.5 pounds (12 quarts) of oil, you've got 782.6 pounds left to devote to people, pets, petunias, or whatever. Obviously, with full tanks 94X was not a seven-, six-, or even a five-passenger airplane (using a 170-pound standard per passenger).

If you were to place seven standard-weight people upon 94X's seven seats, you could pump 26 gallons of fuel into the tanks and fly, say, 200 miles. Technically you could fly farther (figuring 16 gph), but who would go with you?

It should be remembered, however, that 94X is not your typical Lance. Most Lances will likely leave the factory with a lighter load of options. Furthermore, that seventh seat is more suited for children than adults.

Now, let's take a Lance equipped similarly to 94X, but without the 4.2-pound RNAV, the 5.4-pound radar altimeter and the 70 pounds of air-conditioning.

Were you to load that airplane with six 170-pound passengers and one 50-pound child on the jump seat, you could still pump 60 gallons of fuel into the tanks and carry that crew some 600 miles. Those figures would have to be adjusted downward if you planned on taking baggage, but they do underscore the Lance's load-carrying and range capabilities.

We carried nowhere near such a load on our flight check. With full tanks and about 380 pounds of passengers and gear, 94X had a takeoff weight of 3,200 pounds, or was 400 pounds under gross.

The flight, a literal cross-country from Vero Beach, Fla., to AOPA's Plantation Party in San Diego, took two days, but we could have done it in one. We covered 2,250 statute miles in 13 hours, thus averaging 173 mph. Mind you, that total time includes 4 takeoffs and landings enroute.

On the first leg, a 747-mile jaunt from Vero to Lafayette, La., our time was 4:10, which averages out to 182 mph. By the way, a sister Lance flew nonstop from Vero to Beaumont, Tex., an 880-mile hop, and had about an hour's worth of fuel left at touchdown.

Enroute cruise altitudes varied from 6,500 feet up to 10,500, and we averaged just over 16 gph for the entire trip, from startup to shutdown.

Before any startup there's the pre-flight, but since it's so standard with the Lance, inside and out, there's no need to dwell upon it here. However, one panel feature worth noting is the Lance's super-simple fuel selector. Located below the power quadrant, the fuel handle can be moved in an arc from "off" to "left" to "right," with detents for each position.

The flap handle is equally simple. Positioned between the two front seats, the manually operated handle is pulled up one notch for 10 degrees, two notches for 25 degrees, and three notches for the full 40 degrees of flap.

Takeoff calls for 10 degrees of flap (25 degrees for short fields) and some firm right rudder once that fuel-injected Lycoming is brought up to full bore. Start back pressure at 65-70 mph and you're flying seconds later.

Piper has adapted the Arrow's stupid-pilot-proof automatic-gear system to the Lance, so if you flip the gear switch and come back on power before reaching 100-110 mph, the wheels will remain where they are. Unless intentionally disengaged, the system won't permit gear retraction below 93 mph at full power or at speeds above 125-130 mph (maximum gear retraction speed). Conversely, if you're down to 118 mph with power off, or slower still but with some power, the gear will drop automatically.

A gross-weighted Lance is supposed to climb at 1,000 fpm under standard conditions. We never had standard conditions, we were never near gross weight,



# PIPER, 1976

■ ■ While the Lance is clearly the most celebrated new member of Piper's 1976 family of aircraft, the company is promoting two more familiar siblings as "all new" this year as well.

First is the steady old Aztec. Despite this twin's traditional popularity, its market share slipped last year, prompting Piper to devise a quick fix. Voilà, the Aztec F. This latest Aztec features lighter control forces, thanks to a redesigned stabilator, and the TBO has been increased to 2,000 hours on the 250-horse Lycomings. One other improvement is the availability of two internal 20-gallon tip tanks that boost the F model's range by 300 nautical miles.

The second aircraft to undergo major modification was the 180-hp Archer, now dubbed the Archer II. Piper was so pleased with the public's reception of its tapered-wing Warrior two years ago that it adapted that same wing to the Archer. The company says the new wing has improved the Archer's flight characteristics, raised its cruise speed 3 mph, to 144 mph, and upped its useful load by 100 pounds to a total of 1,160 pounds.

One change affecting the entire Cherokee line this year is a newly designed main cabin door. Air and water leaks around the old doors' seals had been a perennial complaint among Cherokee owners. The new door, composed of fewer parts and featuring a one-piece skin, is supposed to still those complaints forever.

The improvements evidenced in the Lance, Aztec F and Archer II are apparently mere harbingers of greater things to come.

Piper President J. Lynn Helms says millions of dollars are now being spent annually on aircraft design and development. And that figure keeps increasing. In fact, Helms said Piper's R&D budget has more than doubled since 1973. New planes are on the way.

The company believes that the changes made in its 17-aircraft line will help Piper capture an additional 2% of the general aviation market in the coming year. It's no secret that next year they'll want more.



Aztec F

## THE PIPER TRIBE

Super Cub	\$ 17,950
Cherokee Flite Liner	19,730
Cherokee Cruiser	15,390
Cherokee Warrior	18,150
Cherokee Archer II	23,170
Cherokee Pathfinder	31,420
Cherokee Arrow II	32,130
Cherokee Six	
260	36,950
300	40,360
Cherokee Lance	48,300
Pawnee D	
235	31,540
260	32,870
Pawnee Brave	41,630
Seneca II	75,100
Aztec F	99,600
Navajo C/R	171,900
Navajo Chieftain	183,560
Navajo P	248,400
Cheyenne	474,000



Archer II

## THE PIPER LANCE continued

and I never saw 1,000 fpm. For example, departing Vero Beach on a warming morning, we showed 500 fpm at 125 mph. Leaving 4,000-foot-high El Paso in 80-degree air, we were indicating 600 fpm at 105 mph. Best-rate-of-climb speed is 106 mph.

During airwork 6,500 feet over El Paso, we went through a full regime of stalls. All were straightforward and were preceded by buffeting.

With gear down and no flaps, the horn sounded at 75 mph and the stall came at 70 mph. With full flaps and gear, the horn came on at 62 mph and the stall at 58. With the aircraft clean (and the automatic gear override "on"), the horn blared at 75 mph and the stall followed at 67 mph.

With gear down and full flaps, pulling 15 inches mp and 2,300 rpm, we flew merrily along at 65 mph indicated. Control pressure was firm and response quick throughout all maneuvers.

One design drawback that became especially noticeable during steep turns was the matter of visibility. The Lance has ten windows in all, which is fine when you're straight and level. But when you steepen the bank, lateral visibility through either side window is nil. Just white wing and headliner. Not the best of situations at busy, uncontrolled fields.

The Lance manual puts approach speed at 86 mph, a figure we chose to ignore. Dale Curry, the Piper check pilot, flies his approaches at 110 mph, is down to 90 mph with full flaps at the threshold, flares at 80 mph, and touches at 75 mph. I followed his example, and the landing rolls we made seemed to be within the advertised figures.

Three cruise checks showed the new Piper to be a good stretch runner. At 6,400 feet, with 24 inches mp and 2,400 rpm, we were using 75% power and trueing out at 185 mph. Fuel burn was 16 gph.

At 8,500 feet with a 14°C OAT, the airspeed indicator showed 155 mph for a 182-mph true airspeed. This was with 2,350 rpm and 22 inches mp, or 65% of rated power. Fuel flow here was 14 gph.

And at 10,500 feet, with an 8°C OAT, the indicator read 145 mph for a TAS of 176 mph. Power was 65%, with 2,400 rpm and 20 inches mp. At this point the burn was down to a miserly 13 gph.

During his presentation, Helms had said that the Lance "is going to go a long way with us." Well, it will go a long way with a lot of people. It will go that way quickly and with fuel efficiency. The Lance is a plane for the times, and one well worth the wait. □