PILOT Flight Check

Piper's Turbo Lance II

HIGH FLYIN' EASY BREATHER

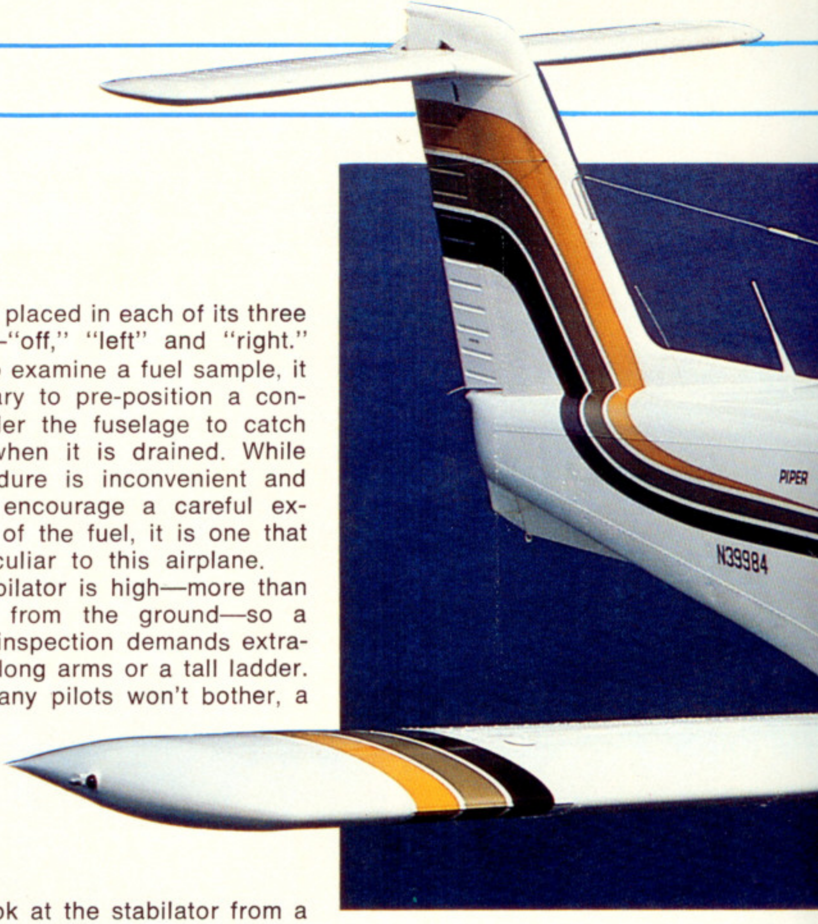
Text and photos by ROGER ROZELLE / AOPA 537321

Piper Aircraft Corp. has taken the Lance II, strapped a turbocharger onto a modified 300-hp engine, extended the nose 15 inches farther from the firewall, left a gaping mouth beneath the spinner and called it the Turbo Lance II. While it closely resembles its normally aspirated Lance II cousin, the turbo-powered version doesn't run short of breath in hot weather, or in climbs to 20,000 feet. The price for higher performance is $8,010 more than the Lance II; the basic equipped price of the turbo model is $67,000.

Phil Boob, Piper's administrator of marketing planning, said that the airplane is aimed at pilots using single-engine aircraft in serious IFR environments "where it gives them the option to fly from 15,000 to 20,000 feet and be above most of the weather." He predicted that the Turbo Lance II will become a "western" airplane, where mountainous terrain and the thin air of high density altitudes tax the performance of nonturbocharged airplanes.

The PILOT spent several days getting acquainted with a Turbo Lance II. The airplane, N39984, is

1978 Piper Turbo Lance II



equipped with a variety of options, including a $15,000 Narco Centerline radio package. The final cash register tally rings in at $97,736. As equipped, the airplane's empty weight is 2,322 pounds. With a full load of fuel, N39984 can carry an additional 714 pounds.

The aircraft has a commanding ramp posture that attracts aviators who are curious about its "mouthy" appearance. The large oval-shaped scoop in the nose is probably the most obvious difference between turbo and nonturbo Lances. That opening provides air to feed the turbocharger and cool the engine, plus it houses the landing/taxi light. For the unwary pilot, the airplane could become home to an entire flock of birds or storage for a squirrel's winter supply of nuts—the open jaws provide a spacious entrance to the engine compartment.

According to Dale Curry, Piper corporate pilot, several variations of protective meshes were experimented with to protect the opening, but all of them reduced airflow to the turbocharger, reducing engine performance, and the idea was dropped. So it's up to the pilot to conduct a careful preflight of that unprotected inlet.

An access panel to the oil dipstick is located on top of the engine cowling. It is a long reach to check the oil for a person of average height and the operation requires hugging the cowling and carrying out the operation more by feel than by sight. Keep in mind that a 300-hp engine is rather large and the inconvenience is about standard for airplanes with big engines. A small stool or ladder offers a simple solution.

Each wing carries 47 gallons of usable fuel in two tanks with single-point refueling. An auxiliary gauge in each wing registers the fuel quantity in the inboard tanks up to 25 gallons. Quick drains are located under the wings within relatively easy reach; a little bending and stretching is all it takes to collect a fuel sample.

A fuel strainer lever is located behind the copilot's seat. It is pressed for several seconds while the fuel selector is placed in each of its three positions—"off," "left" and "right." In order to examine a fuel sample, it is necessary to pre-position a container under the fuselage to catch the fuel when it is drained. While the procedure is inconvenient and does not encourage a careful examination of the fuel, it is one that is not peculiar to this airplane.

The stabilator is high—more than nine feet from the ground—so a hands-on inspection demands extraordinarily long arms or a tall ladder. Though many pilots won't bother, a regular look at the stabilator from a ladder would be a good idea. More than a cursory glance should be given to the location of the stabilator trim position, to make sure that it agrees with the cockpit trim indicator. This lesson was well-learned during the PILOT's evaluation of the airplane.

Before one of our flights, the cockpit trim tab indicator was set at the neutral position. However, the actual trim setting was well aft of neutral; the wire indicator had slipped out of its position and rubbed against its plastic housing. The far-aft trim setting caused a dramatic pitch-up on takeoff.

There are two entrances to the airplane: a forward door to the cockpit (located above the right wing), and a door to the passenger compartment (located aft of the left wing).

The passenger cabin door is sufficiently wide for easy entry but it opens above the cabin floor. As a result, the fuselage forms a lip several inches high and passengers must lift their legs over it and step down into the cabin. Those few moments of ungainliness, common to many general aviation aircraft, are worth the comfort found inside.

The cabin features an optional conference-style seating arrangement that includes curtains, headrests,

The Turbo Lance II cruises easily at 20,000 feet, greatly increasing the amount of weather that can be overflown by its normally aspirated cousins.

The cabin/utility door combination creates a 57-inch-wide opening that affords easy entry for people and allows a variety of cargo loads to be accommodated.

A single, right-hand door provides access for the front seats. IFR avionics packages, available from Narco, King or Collins, include a two-axis autopilot as standard.

plush carpet, a refreshment console and a fold-down armrest, for an additional $1,630. The furnishings reflect careful attention to detail. Arm rests at all four seat locations add to passenger comfort. The only flaw in the arrangement of facing seats is that if all four are occupied, an intertwining of legs is likely. Although that seating arrangement may not always offer the most in comfort, Piper reports that of 178 Turbo Lance IIs delivered by Sept. 1, it was selected in more than 85% of them. The same is true for the 245 Lance IIs shipped in the same period.

The noise level in the passenger compartment during flight is comparatively low. Conversation between the aft seats and the cockpit is possible without much effort; N39984 is fitted with additional soundproofing (a $220 option).

The aircraft also has an optional fan ($360) which supplies air through the overhead ventilation system during ground operations. It is a worthwhile option, especially in warm weather. The fan is not needed during flight, when the system provides a sufficient and adjustable flow of outside air.

Piper sees the Turbo Lance II as a "people mover" rather than a

"cargo hauler," according to Boob. However, it has cargo-carrying convenience for those who want it. A swing-up utility door adjoins the aft cabin door, a combination that creates a cavernous opening to the cabin and makes for easy access to the baggage area behind the aft seats. The passenger seats are easy to remove, making a wide variety of cargo loads possible.

There is a forward baggage compartment between the firewall and the cockpit, reached through a door on the right side of the cowl. One hundred pounds can be carried in the eight-cubic-foot compartment.

Access to the cockpit of the Turbo Lance is about standard for low-wing aircraft, but would be less awkward if there were some appropriately placed handholds. Once seated, though, the cockpit is especially roomy and comfortable; a six-foot-four pilot was able to fit nicely in the left seat with adequate head and leg room.

Engine start is straightforward, but it was necessary to operate the test airplane's electric fuel pump continuously during ground operations to keep the engine running smoothly. Surging occurred without the fuel pump, and the engine would not maintain the 1,000 to 1,200 rpm recommended in the flight manual. A setting of 1,500 rpm kept it smooth.

PIPER TURBO LANCE II
PA-32RT-300T
Basic price $67,000

Specifications	
Engine	Lycoming TIO-540-S1AD 300 hp @ 2,700 rpm
Propeller	Hartzell, two-blade, 80 in
Wing span	32 ft 10 in
Length	27 ft 8 in
Height	9 ft 6 in
Wing area	175 sq ft
Passengers and crew	6 (7 optional)
Cabin length	10 ft 5 in
Cabin width	4 ft 1 in
Cabin height	4 ft 1 in
Empty weight	2,011 lb
Useful load	1,589 lb
Payload with full fuel	1,025 lb
Gross weight	3,600 lb
Power loading	12 lb/hp
Fuel capacity (standard)	98 gal (94 usable)
Oil capacity	12 qt
Baggage capacity	200 lb (25.3 cu ft)

Performance	
Takeoff distance (ground roll)	960 ft
Takeoff over 50 ft	1,660 ft
Rate of climb	1,000 fpm
Maximum level speed	222 mph (193 kt)
Normal cruise speed (75% power)	201 mph (175 kt)
Economy cruise speed (55% power)	155 mph (135 kt)
Range at normal cruise (with 45-min reserve)	780 sm (678 nm)
Range at economy cruise (with 45-min reserve)	937 sm (815 nm)
Service ceiling	20,000 ft
Stall speed—CAS (clean)	64 mph (56 kt)
Stall speed—CAS (gear and flaps down)	60 mph (52 kt)
Landing distance (ground roll)	880 ft
Landing over 50 ft	1,710 ft

. . . High Flyin' Easy Breather

According to Piper and Lycoming, the problem was caused by misadjusted fuel pressure, which, they said, was easily corrected.

Phil Boob emphasized that the engine in the Turbo Lance II is specifically designed for turbocharging. The compression ratio has been reduced from 8.5:1 to 7:1 and the crankshaft and main bearings have been beefed up to support the higher pressures. As with most turbocharged variants, the Lycoming TSIO-540 has a recommended TBO less than its nonturbocharged version—in this case a 200-hour reduction to 1,800 hours.

Pilots transitioning from smaller single-engine aircraft may feel that the Turbo Lance's long nose makes forward visibility difficult during taxiing; it encourages head stretching (made easier by the vertically adjustable pilot's seat), side glances and reasonable speeds. Ground handling was surprisingly light work, particularly for a PILOT staffer with a lot of Cherokee Six time, who expected heavy rudder pressure.

The takeoff roll is where the powerful engine of the Turbo Lance II begins to show its stuff. The throttle must be advanced smoothly to maximum takeoff power setting (2,700 rpm and 36 inches). Throttle-jockeying should be avoided with any powerplant, but especially with large, complicated ones such as that in the Turbo Lance. A recommended procedure is to apply power about half way with the brakes on, then slowly apply full power during the initial stages of the takeoff roll.

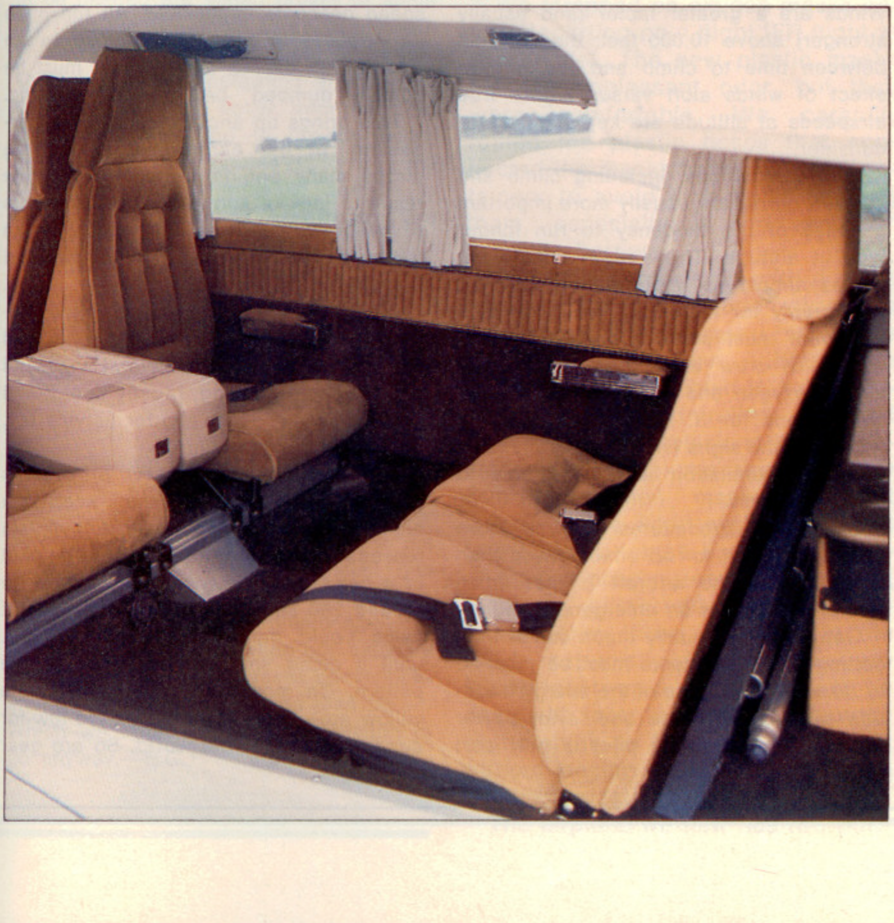
A characteristic of this installation demands careful monitoring of manifold pressure during full-power operations. The waste gate, which prevents overboosting (and resulting damage to the engine), is controlled by the throttle. The throttle is sensitive, particularly when the engine is cold; it is quite easy to exceed the recommended maximum 36 inches of manifold pressure. To ease the problem, an overboost warning light has been included in a set of annunciator lights mounted within easy "heads-up" view on the top of the panel. If the amber light comes on, the pilot merely reduces throttle enough to cancel the warning. Monitoring the manifold pressure gauge, mounted low on the panel, is too distracting during critical maneuvers, such as takeoff or balked landings. The engine is fitted with an additional pressure-limiting device, a pop-off valve, if things go awry.

Piper and Lycoming could have installed an automatic turbocharging system and taken those manual throttle adjustments out of the pilot's hands—along with some money from his wallet. Such a system is more complex and results in higher initial cost and increased maintenance. One alternative is to install a separate turbo controller, like an additional throttle, an arrangement that is more prone to pilot-induced overboosting. Another alternative is the fixed-bleed system, which collects a penalty in reduced performance at altitude.

The airplane feels heavy and solid as it accelerates down the runway, which might be expected from an airplane with a 3,600-pound gross weight. Piper suggests a rotation speed between 75 and 85 knots (86-97 mph) in a normal takeoff (no flaps). We generally settled on 80 knots (92 mph), a speed that required less effort to fly off the runway, usually in less than 2,000 feet. An initial tendency to over-rotate must be controlled. The high stabilator is more responsive and powerful than conventional arrangements.

During initial climb, nearly full right rudder is required to keep the ball centered, compensating for P-effect, a characteristic that is multiplied by having the propeller so far in front of the airplane. Cranking in a lot of

Longer nose of the turbocharged version of the Lance (left) incorporates a forward baggage compartment that also reduces cabin noise from the powerful, six-cylinder engine. Oxygen consoles double as arm rests in the "club seating" interior configuration (below). An efficient fresh-air ventilation system can be supplemented with an optional fan or air conditioning.



rudder trim before takeoff helps.

The landing gear system, hydraulically operated by an electrically reversible pump, is equipped with an automatic, pressure-sensing extension control. It prevents retraction at airspeeds below 81 knots (93 mph) with full power, and automatically lowers the wheels at speeds between 81 and 103 knots (93-119 mph), depending on power setting and pressure altitude. This arrangement makes a wheels-up landing less likely since it functions whether the gear lever is placed "up" or "down." But it does not make a gear-up landing impossible. A lever located beside the manual trim wheel overrides the automatic system. A yellow warning light flashes when the automatic extension system has been locked out during power reductions with gear up. However, its location under the gear handle creates some problems in seeing it. Bright sunlight also tends to wash out its message, and on one occasion it failed to blink its warning; the bulb had worked loose.

The heart of the gear sensing system is a pitot/static mast that protrudes from the left side of the fuselage. If it ices over or clogs, the gear automatically free-falls into position (unless the manual override is engaged). A heated mast is optional. For any kind of IFR operation, it should be considered mandatory.

We prefer manual gear operation, but other pilots may like the automatic system. At any rate, Piper gives pilots their choice.

The best rate of climb is 95 knots (109 mph), which produces an initial climb rate of 1,200 fpm during near-gross-weight operation. At this airspeed, pitch angle is too high for good forward visibility during VFR operations.

The recommended climb power setting, selected at 1,000 feet agl, is 33 inches manifold pressure and 2,575 rpm. That power setting produces 270 hp, available all the way to the airplane's maximum operating altitude of 20,000 feet. Combined with that power setting, an airspeed of 105 knots (121 mph) provides a 600- to 700-fpm climb and much better visibility over the nose. The manifold pressure decreases about one inch per thousand feet of climb, so the pilot has to push the throttle forward to maintain it. The altitude limitation is based on systems other than the powerplant; the airplane can go higher.

Familiarization operations included slow flight at 3,000 feet at an OAT of 75°F (21°C). At 65 knots IAS (75 mph), with full flaps and gear down, altitude was held easily with power settings of 23 inches manifold pressure and 2,500 rpm. Gentle turns of 30 degrees, right and left, were performed. Control response was positive; the aircraft still felt solid at these relatively low speeds. Approaches to power-off stalls sounded the warning horn at 56 knots (64 mph) followed by a strong buffet. The airplane pitched down at 52 knots (60 mph) IAS.

Departure stalls produced steep pitch attitudes in the clean configuration. With 28 inches manifold pressure, the airplane began to buffet at 60 knots (69 mph), followed by a pitchdown that came near 55 knots (63 mph). Holding the airplane in the stall resulted in a 2,000-fpm descent.

The stall warning was good and there were no unusual characteristics

High Flying

The increased capability and versatility that turbosupercharging offers pilots extracts a price beyond higher initial and maintenance costs. With the ability to make more choices—and more decisions—comes the need for more knowledge and considerably more planning.

The pilot of a typical single, with a practical operating altitude of not much above 10,000 feet, is often faced with a (relatively) simple go/no-go decision based on weather. The high flier can more frequently make a go decision, but weather has to be analyzed more carefully. The ability to make longer legs makes the likelihood of substantial weather changes from point of departure to destination greater, for one thing.

Calculation of the best altitude for conditions and for the mission becomes a more essential part of flight planning. Winds are a greater factor (and usually stronger) above 10,000 feet; the trade-off between time to climb and the relative effect of winds aloft versus higher true airspeeds at altitude are key elements to consider.

Fuel calculations, including climb and descent burns, are usually more important because of the tendency to run longer legs at altitude. The oxygen supply becomes almost as important a factor as fuel supply for flights above 12,500 feet. The pilot must adhere to FAA requirements for crew and passenger supplemental oxygen and know the physiological reasons for it. He must be able to recognize the signs and effects of hypoxia and hyperventilation and know how to deal with them.

Emergency procedures become more essential, too, if for no other reason than the fact that the aircraft is that much farther away from an emergency landing.

Getting up is usually much easier than getting down. Descents must be planned to take full advantage of the energy trade-offs available (altitude and lower power for airspeed). But the pilot is only part of the equation. The realities of the ATC system often make long, high-cruise-speed descents impossible. All too often an airplane is brought in close to an airport with excess altitude that must be quickly "dumped" before entering traffic.

This brings up another concern: supercooling. In the early days of the big turbos many engine problems were the result of lack of knowledge of the effects of low-power descents. The impact is like taking a piece of very hot aluminum and dumping it in a vat of dry ice: Ouch. Failure to maintain reasonable temperatures is bad enough without turbos; add the turbine running at several thousand rpm inside its housing, rapidly cool it and the results are much shorter service life, if not catastrophic failure.

The combination of ATC procedures (and we aren't against the "keep 'em high" policy) and the need to maintain reasonable temperatures can put the pilot in a box. If maneuvering speed were up around 250 knots, most singles and light twins could handle the problem . . . until it came time to slow down in the pattern. On most of the high fliers, the yellow arc—caution range—is too low for conditions in the real world. So are gear noted during these maneuvers. Stalling the Turbo Lance II requires a lot of work. It is a stable airplane when properly trimmed, resisting efforts to be moved from stabilized flight without considerable control input.

We evaluated cruise performance at 7,000 feet with an OAT of 60°F. Obtaining the best advantage of the airplane's available fuel/power combination requires a knowledge of proper leaning techniques.

A single-probe exhaust gas temperature gauge is located to the right of the throttle quadrant on the lower section of the panel. However, we would prefer to see a multi-probe EGT on a flying machine such as the Turbo Lance II. In addition, the gauge's location makes accurate settings awkward unless the pilot shifts his body to the right for a better look at the instrument while making mixture adjustments.

Best power at 75% (with 28 inches and 2,300 rpm) with the mixture leaned 150°F on the rich side of peak resulted in a fuel flow of 20 gph and an IAS of 145 knots (167 mph), for a TAS of 168 knots (193 mph).

A 65% power setting (25 inches and 2,300 rpm), leaned for best economy (50°F on the rich side of peak EGT and fuel flow of 16.5 gph) produced an IAS of 135 knots (155 mph) and a TAS of 156 knots (179 mph).

A 55% power setting, 22.5 inches and 2,300 rpm (leaned for best economy), yielded a fuel flow of 14 gph and a speed of 125 knots (144 mph) IAS. The TAS came to 145 knots (168 mph).

Operating the Turbo Lance II at altitudes from 12,500 to 20,000 feet demands considerably more careful flight planning. Winds aloft are generally stronger, making altitude selection more critical, especially for westbound flights. The airplane's altitude capability enables it to fly above most of the weather, but it does not guarantee a VFR destination.

Flights above 18,000 feet msl require an IFR-equipped airplane and an instrument-rated pilot at the controls, as well as some procedural changes. Just as the turbocharger provides extra air to the engine to breathe at higher altitudes, human pilots require additional oxygen to compensate for the thinner air. For the properly prepared pilot, the Turbo Lance II opens the door to a different realm of flying from that in which most of us operate.

We strapped on oxygen masks before departing on a night IFR flight at 15,000 feet. The new plastic masks had an unpleasant odor, but they were comfortable. We carefully routed the plastic hoses that connected the masks to the oxygen containers to avoid kinking or tangling them, especially in the seatbelt/shoulder harness.

The masks interfered with cockpit conversation; we found ourselves pulling the masks away when we spoke to each other. Although the pilot's mask had a built-in mike, several air traffic controllers reported that radio transmissions were unclear. The problems presented by wearing oxygen masks are not unique to the Scott system installed in the Turbo Lance II. Many pilots—and more passengers—dislike them, but many pilots use oxygen at altitudes below those specified in the FAR's, especially at night. They are minor inconveniences that must be dealt with in order to take advantage of the ability to fly above 12,500 feet without paying the additional price for pressurization.

The airplane we flew has two portable oxygen tanks which sit between the middle seats in the passenger compartment, replacing the refreshment console. They don't hinder passenger comfort. Each container holds 22 cubic feet. We breathed oxygen from takeoff to touchdown during a three-hour trip flown mostly at 15,000 feet. The system is simple: turn it on. It supplies a sufficient amount of oxygen at any altitude up to the plane's upper limit.

Each container supplies 4.7 hours of oxygen for one person at 15,000 feet (2.4 hours for two). Six people using the system reduces duration to 1.6 hours. Obviously, careful flight planning is required because oxygen endurance at altitude can be more critical than fuel endurance. Another concern is finding airports with the ability to service and refill oxygen bottles.

Piper recognizes the endurance restrictions of the aircraft with the current oxygen system; it is looking into the possibility of a larger, permanent system. It would add weight and would cost more than the $1,280 system in our test aircraft. Also, it would take some flexibility from the airplane, since the pilot would not have the option to leave the system in the hangar for flights below 12,500 feet.

Night operations, especially on dark asphalt, demand care. The scoop-mounted light produces a narrow light beam and proved a strong inducement to stay on the centerline. We thought night landings might be affected, too, but they were no problem.

Ten thousand feet was only eight minutes from the runway at Vero Beach, Fla. The airplane climbed at 1,200 fpm at 95 knots (109 mph). Conditions were IFR with scattered thunderstorms, haze and darkness which caused delays climbing to 15,000 feet. Once we were established at altitude we were above most of the weather; occasional lightning flashes outlined the ever-present cumulus along the Florida coast. We had the airspace pretty much to ourselves; contact with ATC was infrequent.

Vero Beach fell quickly behind as the Lance carried us northward toward Georgia. Fuel flow at 75% power, leaned for best power, was 22 gph. The IAS was 135 knots (155 mph), TAS a healthy 175 knots (201 mph). It was cool outside the air-

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and flap extension speeds. What seems to be needed are speed brakes or spoilers (and the structures to go with them). This is an area the manufacturers should study in the real operating environment to initially provide better information to their customers, and to provide better aircraft systems to enable us to fit in the traffic mix without potential damage to the engine or airframe as products are developed.

In the meantime, one can only develop a system which fits the aircraft and is comfortable for pilot and passengers. Some pilots are slowing to gear speed at altitude before descending (but who wants that stuff hanging out in icing conditions?); others are learning to lean during descent (which is contrary to what most of us had drilled into our heads as fledglings). In fact, Lycoming and Piper recommend leaning during descent in the Turbo Lance to maintain exhaust gas temperatures at 1,400°F.

High flying is a new environment for many of us, which extends our capacity and comfort. But it increases our responsibility to know more and to plan better. Which we think is the right direction to go anyway.—E.G.T.

TURBO LANCE II continued from page 43

plane—30°F (19° C), but the cabin afforded short-sleeve comfort. Particularly interesting about our cocoon in the sky was that we didn't need the heater; we simply closed the air vents, which indicates a tight cabin and good workmanship.

The Turbo Lance II is a solid instrument platform. Its response to trim is especially evident during cruise, where the airplane is very stable, despite the fact that the test airplane was out of rig and tended to roll to the right.

An overhead light, with a red lens and adjustable intensity, is a welcome addition to the cockpit. It provides an additional source of illumination for the instrument panel and the rest of the cockpit. Chart reading is easy using it and night vision is not disturbed. It also makes looking for lost pencils less frustrating.

Cockpit reflections in the forward windshield are minimal, but they are a bit distracting in the side windows where there is less shielding from the panel lights. The wingtip strobe lights are annoyingly visible, even without cloud or haze to reflect their flicker.

During that flight we became concerned with the alternator capacity. Inflight experimentation showed that in an IFR landing configuration—avionics, pitot heat, fuel pump, lights (landing, instrument, navigation)—current drain was 60 amps, the maximum available. We wondered what might occur during a go-around when the electrical demand of retracting the landing gear increased the load. We decided to balance the load to avoid high drain.

Piper later assured us that it was not a serious problem; any additional current requirements could be supplied by the battery, which had sufficient reserves to meet power surges imposed on the system. However, we were cautioned against long flights that pressed the system above 60 amps because the battery would be drained.

Night lighting of the instrument panel and side console is excellent. Rheostats allow adjustment of the lights to suit almost anyone's taste and outside light conditions. Except for one instrument, the panel is easily visible at low light levels, without distracting differences in intensity. The one exception is the lighting for the altimeter. The pressure setting knob is situated directly above the instrument's light and casts a shadow across the face of the dial.

We discovered another way to deplete the battery: two overhead dome lights—one above the copilot's seat and the other above the rear passenger compartment entrance—are straight-wired to the battery. That works out very well in terms of convenience; there is no need to crawl into the airplane and turn on the master switch to get light.

But on two different occasions during our week of flying the aircraft, dome lights were left on during daylight. The first time, the battery went flat after two days. Servicing the battery, located under the forward baggage compartment, is a lot of work. An access panel on the left-hand side of the forward fuselage has to be removed—eighteen screws hold it in place. Four more screws have to be removed from the floor to reach the battery.

Despite that experience, a dome light was left on a second time for two days. Evidently some baggage hit the light switch during loading. Fortunately, sufficient power remained to start the engine.

What goes up, must come down. In the case of higher altitude operations, that descent must be well planned in order to protect the engine from rapid cooling. A descent from 15,000 feet did not present any problem. Power was reduced three inches and the nose pitched down slightly, which produced a 500-fpm descent at 160 knots (184 mph). The manual suggests leaning to an EGT of 1,400°F to maintain acceptable cylinder-head temperatures during the descent.

For those unfamiliar with the airplane, landing the Turbo Lance II requires frequent trim changes to maintain comfortable control pressure when power is reduced. Normal approaches with full flaps feel best at 90 knots (104 mph). An over-the-fence speed of 80 knots (92 mph) makes it simple to ease power as the airplane settles onto the runway. Landings are straightforward, generally requiring less than 2,000 feet of runway. Approach speeds down to 65 knots (75 mph) reduce landing distance considerably (along with judicious use of optional heavy-duty brakes and tires, which cost $155).

Pilots who step into the cockpit of a Turbo Lance II are going to discover a sophisticated single-engine airplane that is well suited to the IFR environment. It is a machine that offers good performance to meet its mission, but it demands competency and planning, especially in the higher altitudes where it seems most at home. □