Pilot Flight Check:

THE INTERCEPTOR 400

Interceptor 400 prop jet lifts off a rainy runway at North Las Vegas Air Terminal. Photos by the author

by DON DOWNIE / AOPA 188441

It takes a cross-country trip to appreciate fully the advantages of a high-performance aircraft. That's why I went along on one leg of a recent sales tour made by the Interceptor 400, Interceptor Corporation's new single-engine prop jet.

We had a full load—four people, baggage, and almost all the 145-gallon jet-fuel capacity—as Interceptor chief pilot Tom English and I taxied out from Brackett Field, just east of Los Angeles, and headed for Las Vegas. Weather was singularly scroungy on the desert side, so we filed IFR even though Brackett was scattered-to-broken.

The Interceptor 400 is simple to start, taxi, and fly. N74166 carried a Garrett/AiResearch TPE-331-1-101 665-shp turboprop, flat-rated to 400 shp. (Flat-rating restricts engine power at lower altitudes by monitoring a torque or horsepower gauge.) After startup, just about the only caution

Vertical tail area of the Interceptor is 35 percent larger than that of its recip-engine relatives, to handle the added power up front.

that English took was not to stop for too long at any one spot on the asphalt taxiway—exhaust gases tend to melt the blacktop.

Even with "only" 400 shp on takeoff, you're immediately aware of the torque, "P" factor, or whatever. It takes a very heavy right foot to keep the nosewheel and the centerline together. The vertical tail area of the "400" has been increased by 35 percent over that of the reciprocating-engine Meyers and Aero Commander 200, to take care of the added power.

Takeoff calls for a shift from low to high propeller rpm, with the rpm going from 65 percent, at ground idle, to 96–100 percent for takeoff. Turbine shaft rpm is 41,730 maximum, with a reduction to 2,000, on the three-blade Hartzell prop.

Gross weight has been increased 1,000 pounds over the "recip" models, to 4,030, so the Interceptor handles like a fairly heavy aircraft. The only limiting factor on takeoff acceleration, at least for the novice "400" pilot, is the amount of rudder available at slower speeds.

Stall speed, with full flaps and gear down, is 68 mph, so rotation was made as we passed through 80–85 mph, with 20 degrees of flaps.

Cruise-climb is a thing of beauty! At 140 knots (161 mph), more or less, you auger upward at a steady 1,500 fpm. Just ease forward on the power lever to maintain 400 shp as the thousands of feet flick by, and you'll hold this smooth rate of climb to 18,000 feet. (A new TPE-331-6-251 840-shp turboprop is scheduled for all future models, to maintain this rate of climb to 24,000 feet). Time between overhauls on the present engine is already 3,100 hours, and the company anticipates over a million miles between overhauls, since 400 shp is not much above idle power.

Los Angeles Center gave us a choice of 12,000 or 14,000 feet on Victor 21 for the 214-sm trip. We took 14,000 over the buildups and dropped to the MEA of 12,000 at Wheaton Intersection. In-flight panel photos showed 180 knots (207 mph) indicated, at 12,000 feet, or about 223 knots (256 mph) true. We picked up a little ice, but both cabin pressurization and heating were excellent. The single door has seven holddowns, six moving plus a hook, with an excellent pneumatic door seal. Cabin pressure differential is 2.8 psi.

Interceptor Corporation President Ted Malpass (AOPA 254722), who has logged more than 1,100 hours in a conventional Meyers, explained during our flight that the "400" will be produced at the company's 16,000-square-foot building in Norman, Okla. The new turboprop will be assembled in lots of 10, as dictated by orders. Price is $125,000, which includes an increase of almost $10,000 in the powerplant alone. A King "Silver Crown" avionics package costs an additional $10,500. Orders require a deposit of $2,000, with a $25,000 "progress payment" due before that expensive engine is installed.

Malpass explained that it would take about 10 months from order to delivery, with part of this lead time required by the newer-dash engine. He said considerable interest in the aircraft has been expressed by several overseas governments, which see the ship as a high-performance trainer and VIP transport. Until contracts have been completed, he's reluctant to say more, except that a volume export order could speed up production for domestic deliveries.

After a smooth, all-too-brief flight, we were vectored around McCarran International traffic for a landing at North Las Vegas Air Terminal.

Gear extension on the "400" is by engine pump, hand pump, or free fall, and flap speed is restricted to 109 knots (125 mph).

Though squalls and gusty weather are most unusual for Las Vegas, our winds were 20 knots, gusting to 30, and new snow hung down to not more than a thousand feet above the 2,200-foot-msl airport. Narrow, 2,125-foot Runway 12 didn't look like all outdoors, as we turned in on a 90 knot (103 mph) final approach to keep ahead of the gusts.

"Don't worry about the runway length," English told me. "Once you have the wheels on the ground, come back over the 'gate' into beta [reverse thrust] and you won't even need brakes."

He was right. We landed, pulled the power lever up over the "gate" on the throttle quadrant, and applied backup thrust for rapid deceleration.

After deplaning passengers and baggage and adding 60 gallons of jet fuel, English and I went out to fly again. Surface winds were strong enough to cause a runway change, but we still had a strong crosswind from the right. Because of the large amount of power available, the upwind wing had a tendency to pick up, so we used almost full right aileron until just before liftoff. English explained that a heavy crosswind from the right represented the worst possible takeoff situation for the "400," but there was more than adequate control available.

The "400" handles turbulence much better than the lighter "recip" models because of the higher wing loading and increased tail area. Slow flight and stalls were completely normal.

Aside from the easy-to-learn me-

INTERCEPTOR 400

Specifications and Performance

Engine Model*	Garrett/AiResearch TPE-331-1-101 turboprop
Horsepower	665 shp (flat-rated to 400 shp)
Propeller	Hartzell three-blade, constant-speed, full-feathering and reversible
Span (ft)	30.5
Length (ft)	27.4
Height (ft)	10.5
Cabin pressure differential (psi)	2.8
Empty weight (lb)	2,400
Gross weight (lb)	4,030
Useful load (lb)	1,630
Baggage capacity (lb)	200
Oil capacity (gal)	3.9
Fuel capacity (gal)	145 (jet)
Fuel consumption (gph)	31
Rate of climb at full gross (fpm)	1,500 (to 18,000 ft)
Service ceiling (ft)	24,000
Max. cruise speed (mph)	280 (at 18,000 ft)
Range (sm) at max. cruise with 45-minute reserve	1,000
Max. range (sm) with 45-minute reserve	1,150
Takeoff roll (ft) at sea level, full gross	860
Over 50-ft obstacle, full gross	1,410
Landing roll (ft)	510
Over 50-ft obstacle	1,200
Stall speed (mph), gear and flaps down	68
Standard price	$125,000

*With new TPE-331-6-251 turboprop, 840 shp, range at max. cruise is projected at 1,100 sm; max. cruise speed is calculated at 316 mph at 24,000 ft.

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chanics of "lighting the fire" in the turboprop powerplant, the only item that this check pilot found the least bit unconventional was the very fine power-lever tuning required on final approach. There's only a slight pressure between considerable thrust and no thrust at all, where the big propeller blades begin to act as an air brake and your rate of sink increases rapidly. English explained that this power sensitivity was present all the time, but showed up more readily in a "dirty" configuration close to the ground.

On our final landing, English encouraged strong application of "beta" after touchdown, and we stopped in a fine spray of water from puddles on the runway. Landing roll for the "400," according to the book, is 510 feet, and we made an intersection turnoff with no difficulty.

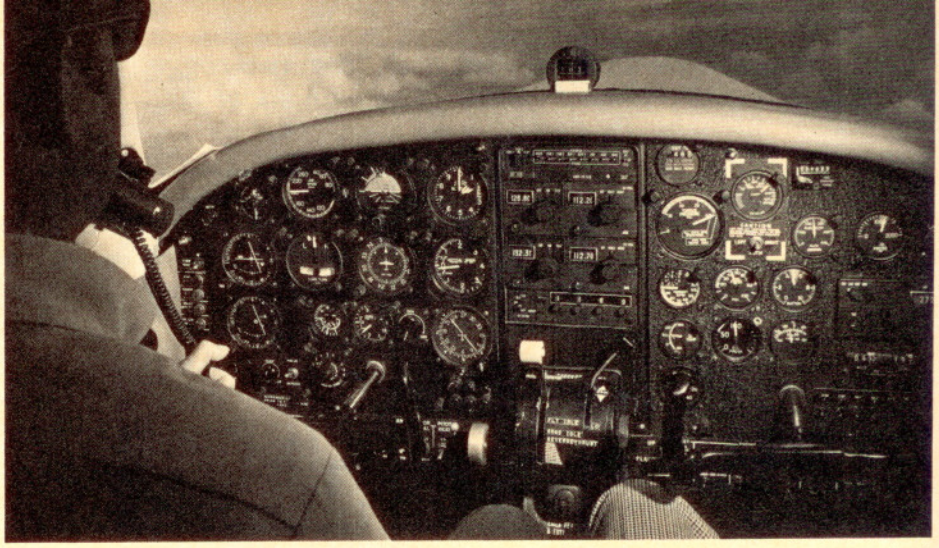
Later inspection showed that the propeller blades on N74166 had some erosion on the leading edges as a result of high-power reverse-thrust demonstrations. Interceptor is checking into the possibility of using a shorter, four-blade prop on the aircraft; however, with normal operating techniques, blade damage should be minimal.

Other modifications may include moving the instrument panel forward three or four inches for added cabin room, and a change in stabilizer angle to eliminate "up" elevator in cruise.

At the present time, no type rating is required for a turboprop pilot, but Malpass recommends that new owners attend the free three-day Garrett/AiResearch engine-familiarization school. Tom English checked himself out in the "400" without prior turboprop experience.

Since the Interceptor is designed to operate best in the higher altitudes of positive control, an owner should have an instrument rating to get the best performance from his aircraft.

As I headed back to California after the checkride, Malpass was out shooting a few landings in the "400" before topping off for an IFR trip to Denver. Interceptor's new propjet seems an ideal vehicle for such a trip, far above the weather of the Rockies. □



Panel layout on the flight-checked aircraft. Interceptor Corporation's chief pilot, Tom English, is in the left seat.

The Mark II — One of a Kind

■■ While laboring for his master's in engineering at Wichita State University, Edwin Merkel (AOPA 114261) dallied with the idea of the "ultimate sportplane." He set the design to paper and then put a model through extensive wind-tunnel testing. The test results were encouraging, but the aircraft itself was still just a hypothesis. Now, 10 years and $80,000 later, Merkel, the aeronautical engineer, has coupled wires and wings and 220 horses and calls it the Mark II. His dream machine has come true.

Although specs are still sketchy, Merkel said the Mark II's 6A-350-C1 Franklin engine will drive the bird skyward at 2,500 fpm and to a 145-mph cruise at 75-percent power. He said the Mark II's handling characteristics are unexcelled; the machine was designed for aerobatics in accord with FAR 23.

The engineer-turned-homebuilder would like to manufacture his biwing aerobat, but there's a major money hurdle standing in the way. Merkel estimated certification expenses could reach $100,000, and that's a bit steep for a Wichita engineer. He has no intention of selling plans for the Mark II, so it's likely to remain a one-of-a-kind dream machine for some time to come. □