With claws still sharp

All airplanes embody compromise. Trade simplicity for speed; send off climb performance for payload; or sacrifice fuel economy for a roomy cabin. Among the difficulties faced by aircraft designers is the careful balancing of these qualities. Worse yet is the task given to the engineer hired to improve an existing, certified design; he doesn't have the luxury of making radical changes. His design box is impossibly small. ■ So it is that Grumman Tiger owners owe Roy LoPresti a debt of gratitude for tweaking this design into one of the most successful compromises

Grumman's Tiger continues as a blue-chipper

BY MARC E. COOK

PHOTOGRAPHY BY MIKE FIZER

around. It's a simple airplane, powered by a 180-horsepower Lycoming O-360 driving a fixed-pitch prop. It drags along fixed tricycle gear and rides on an easy-to-build constant-chord wing. Its systems are stone simple. And yet the airplane is capable of transporting four adults in an admirably comfortable cabin at nearly 140 knots true.

LoPresti's role in the Tiger transformation is well known among AA–5 boosters. The Tiger traces its roots back to the AA–1 Yankee, made by American Aviation in 1969. This two-place trainer-to-be boasted some innovative construction methods, such as glued metal skins and a tubular main wing spar that doubled as a fuel tank. With a small, clean wing, the AA–1 was stunningly fast for the power—108 hp at first from a Lycoming O-235—putting in some 117 kt true at optimum altitude. That early iteration AA–1 was a poor trainer thanks to its mediocre climb performance and the requirement for strict airspeed control.

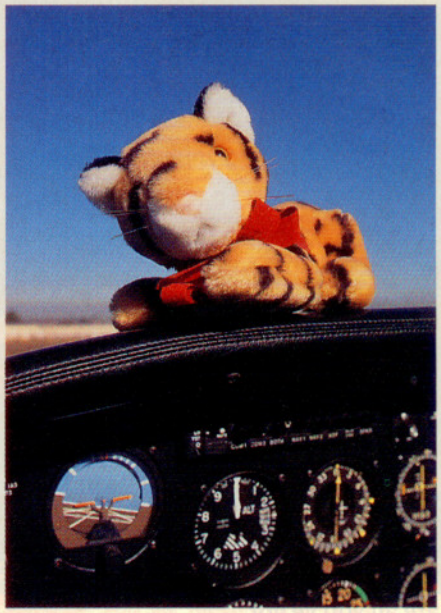
In the early 1970s, American Aviation started work on a much bigger, more complicated four-seat follow-on model, but ended up with what appears to be a scaled-up AA–1. Thus was born the AA–5 Traveler, with 150 hp on board. Although it seemed a close derivative of the AA–1, the Traveler had several system and aerodynamic improvements.

A generously sized cockpit belies the Tiger's compact form.

LoPresti came into the picture when Grumman bought the line in the early 1970s. Out of his efforts to improve the AA–5's performance grew a pair of significantly speedier siblings, the 150-hp AA–5A Cheetah and the AA–5B Tiger. (In fact, the Tiger debuted in 1975, a year earlier than the Cheetah.) Although they shared the wing, fuselage, and basic construction with the Traveler, the Grumman-made airplanes employed extensive aerodynamic improvements. Fairings sprouted everywhere

on the airframe, particularly noticeable around the wing root and at the junction of the belly and main landing gear legs. A revised cowling with significantly smaller cooling-air openings completed the picture.

Today, the Tiger is much sought-after on the used market. Its combination of speed and simplicity—along with that comes reduced maintenance costs—remains compelling for a lot of pilots. You don't need to feed a large six-cylinder engine or manage folding gear and cowl flaps to have respectable cruise performance. You don't need the maintenance headaches or insurance rates that go along with more complicated airplanes, either. The spread in cruise speeds between the



Tiger and a Bonanza amounts to about a half-hour's difference on a 500-nm flight.

The first time you climb into a Tiger you'll notice that it's just *different*. The sliding canopy offers either easy or difficult access, depending upon your agility level. Standard practice is to throw a leg over the cabin sidewall and flick back the seat cushion with the toe of your foot. Step down onto the spar carry-through with that foot and then drag the other one inside. If it's raining, you'll get wet. You'll settle into a cabin that's comparatively spacious and airy. Move the controls and you'll notice the telltales of pushrod and torque-tube actuation for the ailerons; the controls are pleasantly solid. Kick the rudder and you'll also be reminded that there's no

direct nosewheel steering; the brakes are all you've got.

Taxiing a Tiger is not difficult with some practice, although with a strong crosswind blowing you'll want to be confident of the quality of your brake maintenance. The Tiger's rudder is more effective than that of the smaller AA–1, so differential braking during the takeoff roll is almost unnecessary. Once up and flying, the Tiger delights. It's got light and smooth control forces, reasonably well balanced among the axes. Come over from a Cessna 172 or a Piper Warrior and you'll be pleasantly surprised, particularly with the control authority in roll.

Tigers induce few nosebleeds in the climb, with 750 fpm typical at mid weights. Maintaining the proper airspeed is a must to eke the best climb performance, though; stick to 90 kt or you'll sacrifice quite a lot.

Attention to aerodynamic detail makes the Tiger so swift.

This rather fast best-rate climb speed points to the small wing; at just 140 square feet, it's smaller than a Skyhawk's by some 30 square feet. The Tiger is much less forgiving of poor pilot technique than is the aforementioned Skyhawk or Warrior.

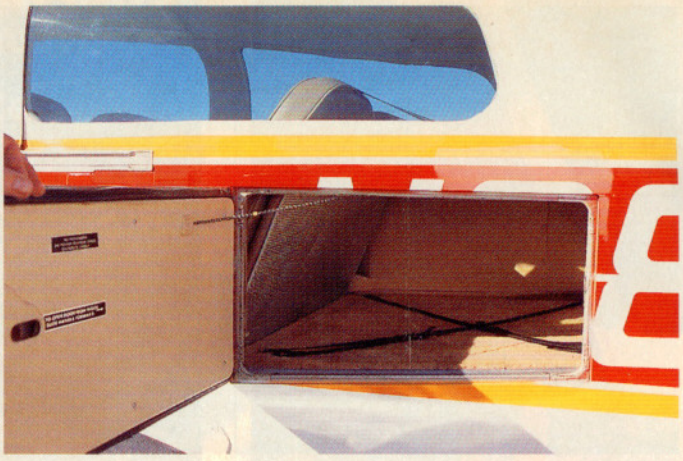
Push the nose over at cruise altitude and be prepared to wave *so long* to simple Cessnas and Pipers. On the same horsepower, the Tiger is nearly 20 kt faster than a Piper Archer and can even hold its own against the retractable-gear Arrow. What's more, with 51 gallons of usable fuel, the Tiger has decent legs; figure on about 9.5 gph in cruise for a reasonable 4.3 hours' endurance. You'll need to push the little Lycoming to fairly high revs at altitude to get best performance, resulting in a fairly noisy cabin; all that glass contributes also to a cockpit that requires use of headsets.

Thanks to the Tiger's slightly higher wing loading—it's a couple of pounds per square inch greater than your typical Cessna or Piper—it handles turbulence well for a 2,400-pound max-gross airplane. Its sharp control reflexes also help keep it on an even keel in choppy air.

Although the Tiger and its AA–series siblings are overrepresented in landing accidents, there's really nothing difficult about getting an AA–5 on

the ground. Adherence to the proper approach speed is important—72 kt should do it—because the flaps aren't as effective as, say, a Cessna Skyhawk's, so you have less variable drag to help you salvage a high, fast approach. And given that the Tiger's nosewheel steering comes just from brakes and rudder, you'll have to practice the rudder-pedal/toe-brake dance to perfect the transition from steering with the tail to steering with the brakes.

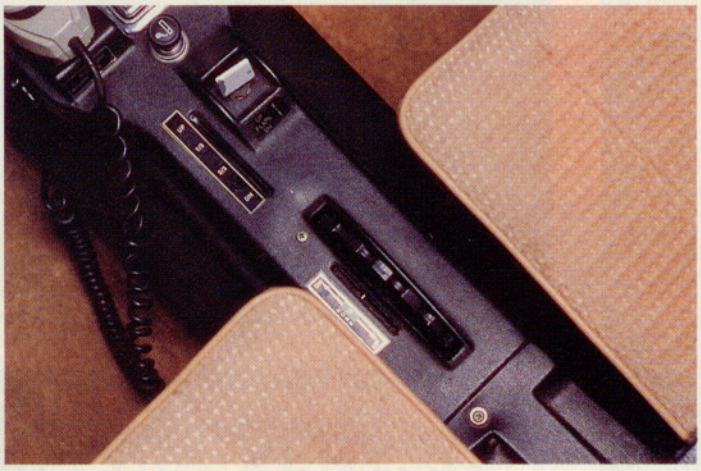
True to its simple self, the Tiger has few critical prepurchase inspection areas. Bond-line separation on the control surfaces—except the ailerons—is an ever-diminishing issue but still demands attention. The Tiger makes extensive use of bonded aluminum, and time has shown that the trailing edges of the flaps, rudder, and elevators are the places most likely to experience a



Nancy Clinton's Tiger shows the hallmarks of the breed: sliding canopy, "mail slot" baggage door, and ancilliary controls on the center console.

debonding of the skin from its support structure. Another item demanding attention is the nosewheel torque-tube support. There are four sockets that carry the nosewheel structure into the cabin. You can bounce the nose gently and listen for a clicking sound; that's one indication that further inspection is needed. Fixing a loose torque-tube bond is about a $2,000 proposition.

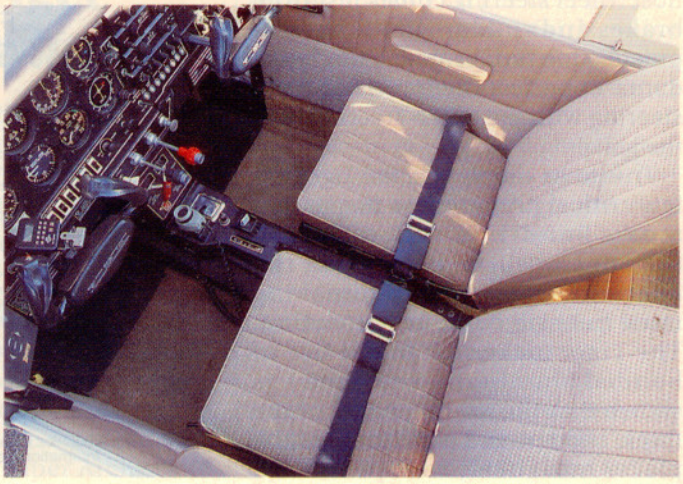
Otherwise, the Tiger's airframe is rugged enough that few specialized inspections are necessary; just look at the usual list of consumables—brakes, tires, propeller condition, etc. (There's a repetitive airworthiness directive on the McCauley prop and an annoying rpm limitation; many owners have switched over to the Sensenich prop with good results.) Engine baffling is perhaps more critical on the Tiger than on other O-360-powered airplanes. In their quest to extract maximum cruise speeds, Grumman and LoPresti cut down the cooling margins. The wet-wing tanks aren't prone to leaking, but still look for telltale stains at the strap covering the junction of the inboard and outboard wing sections.



Four comfy seats under a canopy make the Tiger a good single-family hauler.

Tiger values reflect its vaunted standing in the used market. According to *Vref* (see: www.aopa.org/members/vref), a 1975 AA–5B should sell for $47,000; prices climb predictably to the 1979's value of $53,500. Put that in perspective: A 1972 Traveler is worth just $28,000, while a 1979 Cheetah goes for just $34,500. Meanwhile, a 1991 AG–5B is worth $75,000 today; American General built just 150 of the Tigers between 1990 and 1993.

That the American General Tiger didn't survive is more a reflection of the economic times at the beginning of the 1990s than the design itself. More than two decades after the last Grumman Tiger rolled off the line, the plucky four-placer remains in solid demand, appreciating steadily



and earning accolades from new owners. Moreover, a new company is ready to build you a new one, for $214,000. TLM Aircraft, a subsidiary of Tong Lung Metal Industries, has built a plant in Martinsburg, West Virginia; it intends to revive the AA–5A Cheetah as well. Consider this move just another testament to the careful balance of performance over cost and maintenance requirements; few light aircraft have made these compromises as well as the Tiger. □

E-mail the author at marc.cook@aopa.org. For additional photography of the Tiger, see AOPA's Online Gallery (www.aopa.org/pilot/gallery).

Grumman American Tiger
Current market value: $53,500

Specifications

Powerplant	Lycoming O-360-A4K, 180 hp at 2,700 rpm
Propeller	McCauley or Sensenich, 76-in dia
Length	22 ft
Height	7 ft 10 in
Wingspan	31 ft 6 in
Wing area	140 sq ft
Wing loading	17.1 lb/sq ft
Power loading	13.3 lb/hp
Seats	4
Empty weight, typical	1,450 lb
Max gross weight	2,400 lb
Useful load	950 lb
Payload with full fuel	644 lb
Fuel capacity	53 gal (51 usable) 318 lb (306 lb usable)

Performance

Takeoff distance, over 50-ft obstacle	1,926 ft
Max demonstrated crosswind component	16 kt
Rate of climb, sea level	850 fpm
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) @75% power, best economy 8,500 ft	139 KTAS/3.9 hr (64.8 pph/10.8 gph)
Service ceiling	13,800 ft
Landing distance over 50-ft obstacle	1,499 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	70 KIAS
V_Y (best rate of climb)	90 KIAS
V_A (design maneuvering)	112 KIAS
V_{FE} (max flap extended)	103 KIAS
V_{NO} (max structural cruising)	142 KIAS
V_{NE} (never exceed)	172 KIAS
V_{S1} (stall, clean)	56 KIAS
V_{S0} (stall, landing configuration)	53 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, maximum gross weight conditions unless otherwise noted.