# THE TIGER AS AN ENDANGERED SPECIES

*With the costs of ownership rising, there is hope for the return of a simple airplane that offers surprising performance.*

PHOTOGRAPHY BY ART DAVIS

It's getting really tough. All the hard times we thought we'd faced have turned out to have been mere warm-ups. Aviation fuel is close to two dollars a gallon, when it's available. More and more airports have little if any service available. The waiting list for service of any kind (and we long ago started pulling oil changes and other simple things we once never would have soiled our hands on or spent our time doing) is now weeks long. Shop rates are up to $30 an hour.

It's grim, and it looks as though it might get worse. But we have to fly; it's the only way we can do what we have to do to survive. Beyond the need is the desire. Flying is both the tool and the reward.

But it costs so much. So does everything else, but we still have to cut back every way we can.

This big twin is a great bird and very sophisticated. It's also beginning to create the aura of conspicuous consumption as we roll along with just a couple of seats filled 90 percent of the time.

It has long legs—good endurance—but most of our trips are only 400 miles. The business is taking so much of my time that I can't stay as sharp as I should, and I'm feeling pretty tired at the end of some of those approaches. If only we'd had that yaw damper installed.

The engines are getting a bit low on compression and the oil consumption is going up. And what about those higher temperatures on number two?

Face it. It's time to get a new airplane or lay this one up for a couple of months and spend 30 or 40 grand to get it back up to specs.

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That kind of agony isn't very far in the future. For quite a few operators that moment may have passed already. Many operators of aircraft buy

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more than they need. Machismo has something to do with it; keeping up has something to do with it; buying the perfect or nearly best airplane for five percent of the missions has something to do with it. Whatever the justification, reason or drive behind the aircraft purchase decision of a couple of years ago, particularly for the individual or small company, the combined effects of inflation, operating costs and maintenance availability and costs probably will force a certain amount of trading down in the future.

Compromise may be necessary in our daily lives, but it isn't very pleasant. It certainly isn't very exciting. But if there is any single thing we can predict about our future, it most assuredly is that we shall have to compromise even more.

Accepting the need to compromise, wouldn't it be nice to find something that required the smallest possible sacrifice in the process?

If one were to approach the decision to purchase an airplane from an analytic basis, free of any emotion or ego, there are many factors one would have to study. Initial price, direct and indirect operating costs, maintainability, performance and operational capability would be some of the key items on any list.

Given the average load and average stage length—and the realities of weather across most of the continental U. S.—any purportedly unbiased quest would have to include consideration of light single-engine aircraft, at least, if cost were an object.

One aircraft that would have to be part of the evaluation would be the Tiger. Its performance is as good as some of the light retractable-gear aircraft such as the Beech Sierra, Cessna Cutlass and the Piper Arrow, and its base price is lower. What's more, it is lower than most of its fixed-gear competition in price, higher than all but the Piper Archer in useful load and it outruns them all when it comes to all-around performance.

When one considers direct and indirect operating costs, the simple structure, fixed-pitch propeller and very simple, straightforward fixed gear (fibreglass mains and tubular nose) of the design should keep maintenance costs comparatively low.

Relatively low initial cost, good useful load (1048 pounds) and a turn of speed (129 knots at 65 percent power) that exceeds that of some retractables would seem to define an airplane with strong competitive arguments—strong enough to carve a substantial place for itself in the general aviation marketplace. Add systems simplicity and apparent low maintenance costs, and any marketer should have a winner.

The Tiger hasn't done too badly in its five-year production history. Average units have exceeded 230 per year, which is not bad for a development of a quasi-homebuilt peoples' airplane, Jim Bede's two-place design that was certified as the Yankee. The sales success is even more remarkable when the checkered development and ownership of the design is considered.

From the practical point of view, the Tiger represents an excellent example of what can be accomplished with the simple, basic approach. Which is not to say that it is not sophisticated. It utilizes a tubular spar capable of seven G's (the overall structure is stressed to +3.8 G's in the normal category and 4.4 in the utility category). Much of the fuselage is honeycomb structure; the rest is rivet-free, bonded construction. The design achieves strength, production efficiencies at high volume and aero-

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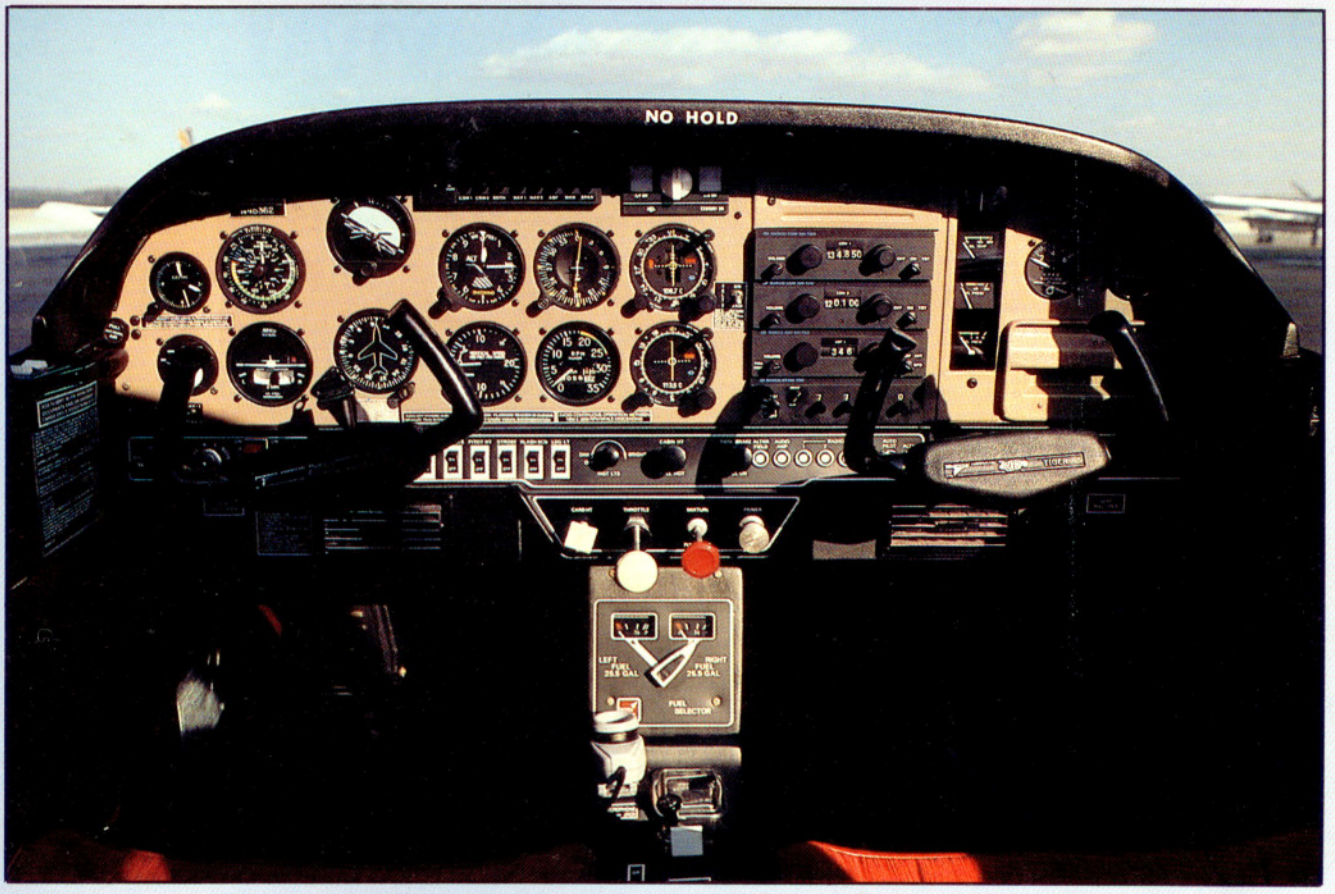


dynamic improvement over conventional construction methods.

It also can produce problems, as reportedly developed when one adhesive producer changed its product without informing the aircraft manufacturer. Skin bonds did not hold; some delamination occurred, much to the consternation of pilots. The episode helped add to questions of the reliability of a construction method that was different from the accepted "drill and rivet" process.

If one looks solely at numbers, without a depiction of the airplane (fixed-pitch propeller, fixed and simple landing gear and all the other peculiarities of the design) it would be a most impressive airplane. If one considers all of the seemingly unsophisticated features of it, it is an astoundingly impressive airplane. Yet number and design calculations aside, prudence and practicality aside, the Tiger is still a remarkable airplane.

Some pilots (and more passengers) might complain about entering through the sliding canopy instead of a door; but, once seated they can see that the Tiger offers comparable space to its competitors.

Everything else about preflight and preparation is very straightforward. The top-hinged engine cowl halves make inspection unforgivably easy during preflight. There are no peculiarities about the airplane, except when it comes time to start the engine. Recommended procedure is to start on the left magneto, switching to the both position after the engine is running. Aside from this, everything is familiar to the transitioning pilot.

The free-swiveling (remember: simple and low maintenance) nose gear might cause some consternation to newly acquainted pilots; but it permits higher than average maneuverability on the ground. Some initial difficulty might be encountered while taxiing in a crosswind, since the airplane tends to weathervane like a conventionally geared one; but the required effort is low, and one quickly learns the knack.

The free-castering nosewheel presents no problem during the takeoff roll, since the rudder becomes effective at relatively low speeds. Directional control is quite precise; in fact, it is too precise to pilots accustomed to other aircraft. They have difficulty as a result of overcontrolling, or too much input, rather than from a lack of control effectiveness.

The elevator is highly effective. Using the recommended rotation speed of 55 KIAS, acceleration to the best climb speed of 90 KIAS is quickly achieved. A rate of climb close to 1000 fpm was normal during our flights with the evaluation aircraft.

In both slow and normal flight, control response and the harmony among the controls is good: light, responsive and well balanced.

Pitch control and trim during cruise and approach is adequate. Stalls are unruffled and are preceded by fair warning. Elevator power is particularly noticeable during the flare. A variety of approach speeds and attitudes were all resolved in the flare. The nose could be lifted below flying speed, even with loading toward forward cg.

The particular Tiger we flew, N45362, was plagued with a succession of airworthiness directives, service bulletins and problems uncovered during maintenance. These kept us from several planned cross-country flights to sample the performance and comfort of the design. So most of our time in the airplane was spent in the less-desirable phases: a series of take-

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offs and landings and a variety of ever-changing attitudes and power settings as several pilots put the airplane through their particular checks.

But, to get back to where we started (and factoring in a fair amount of experience with other Tigers and predecessor models, the airplane is a good performer—efficient, simple and competitive with aircraft outside of its category.

It has suffered a variety of owners. If it had been part of the product line of an established, secure manufacturer, it undoubtedly would have succeeded even better than it has.

Frankly, we hope it survives its latest trauma. Because when the combination of initial and operating costs begin to creep up, airplanes that do more than they appear to be capable of—and the Tiger certainly fills that description—are good to have around.—EGT

**Gulfstream American Tiger AA-5B**
Basic price $37,000
Price as tested $49,665

**Specifications**

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| Engine | Avco Lycoming O-360-A4K 180 hp @ 2700 rpm TBO 2000 hr |
| Propeller | McCauley two blade, fixed pitch, 75 in |
| Wing span | 31 ft 6 in |
| Length | 22 ft |
| Height | 7 ft 7 in |
| Wing area | 140 sq ft |
| Wing loading | 17.1 lb/sq ft |
| Power loading | 13.3 lb/hp |
| Passengers and crew | 4 |
| Cabin length | 9 ft 7 in |
| Cabin width | 3 ft 4 in |
| Cabin height | 3 ft 10 in |
| Empty weight | 1398 lb |
| Equipped empty weight (as tested) | 1477 lb |
| Useful load (basic aircraft) | 1002 lb |
| Useful load (as tested) | 930 lb |
| Payload with full fuel (basic aircraft) | 680 lb |
| Payload with full fuel (as tested) | 616 lb |
| Gross weight | 2400 lb |
| Fuel capacity (standard) | 53.6 gal (52.4 usable) |
| Oil capacity | 8 qt |
| Baggage capacity | 120 lb |

**Performance**

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| Takeoff distance (ground roll) | 865 ft |
| Takeoff over 50 ft | 1550 ft |
| Rate of climb (gross weight, sea level) | 850 fpm |
| Maximum level speed (sea level) | 148 kt |
| Cruise speed (75% power, 8500 ft) | 139 kt |
| Cruise speed (65% power, 9000 ft) | 131 kt |
| Range at 75% cruise (with 45-min reserve) | 554 nm |
| Range at 65% cruise (with 45-min reserve) | 574 nm |
| Service ceiling | 13,800 ft |
| Stall speed (clean) | 56 kt |
| Stall speed (gear and flaps down) | 53 kt |
| Landing distance (ground roll) | 410 ft |
| Landing over 50 ft | 1120 ft |

# SURVIVAL AFTER SAVANNAH

After it was unleashed seven years ago, the Tiger clawed a sizable niche for itself in the four-place, single-engine segment of the general aviation aircraft marketplace.

Those associated with the Tiger through its brief history are quick to point out that many more sophisticated singles also were cowered by the Tiger's speed and handling characteristics and that it was through no fault of its own that production of the Tiger was suspended last December.

The Tiger descended from the BD-1, a bonded two-seat airplane designed by James Bede in 1962. The BD-1's wings and horizontal tail components were interchangeable; and, although the wings could be removed to permit the aircraft to be towed behind an automobile, the BD-1 was stressed to 9.2 G's.

The BD-1's early descendants became common tools for pilot training, but Bede says he did not envision the airplane as a trainer. "There was a Cessna 150 and a Colt at the time, and Piper was coming along with the Cherokee 140," he said. "What was lacking was a good little sport plane. I felt that once a fellow got a private pilot license, he didn't want to continue flying his trainer, he wanted to move up to something a little bit snappier."

Bede flew the first BD-1 prototype in 1963 and logged about 180 hours in the aircraft before selling the design rights to American Aviation Corporation a year later. Bede says he served as a consultant to American Aviation until 1965 when he formed World Flight Inc. (later called Bede Aircraft Corporation) to build the BD-4.

American Aviation obtained a type certificate for the BD-1 design as the Yankee and began production in 1968 at its plant in Cleveland, Ohio.

American later modified the Yankee's wing to provide more docile stall characteristics and introduced the Trainer and the TR-2. The company's first attempt at a four-place aircraft was the AA-2 Patriot. "It was really tragic," Bede recalled. "It was big, it was slow and it was a dog."

American scrapped the AA-2 program in favor of the 150-hp AA-5 Traveler, which first flew in 1970. "The only comparison between the AA-2 and the Traveler was that they had three wheels and four seats," Bede said.

Grumman Corporation acquired American Aviation in 1974. The plant was moved at great expense from Cleveland to Savannah, Ga., and was dubbed Grumman American. The lightplane line received a cool reception when it was moved into facilities already engaged in the production of Grumman's Gulfstream business jets.

"We had growth pains internally in trying to make the small airplanes in the same plant in which we were making the Gulfstream," said Roy Garrison, who headed marketing for the lightplanes through most of their history. (Garrison now is commuter aircraft sales manager for Cessna Aircraft.)

"I don't think you could say there was a conflict," he said. "But, you get a guy who's building airplanes like the Gulfstream II and III—he thinks small airplanes are toys.

"It's kind of like trying to make the Pinto on the Cadillac line," Garrison said. "I think it would have been better had the two manufacturing facilities and organizations been kept completely apart."

Grumman American introduced the Tiger in 1974. Roy Lopresti, who developed the Mooney 201 and 231, played a major role in the introduction of the Tiger.

"The Tiger is basically a Traveler, cleaned up and with horsepower raised to 180," Lopresti said. "The change from the Traveler to the Tiger was remarkably free of problems.

"The older Traveler tail was an adaptation of parts taken from the Yankee, with some scabbed-on pieces to make a small tail do the job," he said. "The Traveler was very sensitive in the pitch plane, so we put what we thought was a better horizontal tail on the Tiger to help the flying characteristics.

"Drag reduction came from reduced cooling drag internally, better cowling shape externally, plus some attention to fillets and fairings on the landing gear," he said. Lopresti, who left Grumman American to join Mooney Aircraft shortly before the Tiger was certificated, said the aircraft was a delight to

fly. "The control harmony is good, and the control forces are relatively light," he said.

"It's an easy airplane to build and maintain, because there are very few parts in the airplane. I think the Grumman airplane probably has about one-fifth the parts that a Mooney airplane has.

"The bonding technique in production forces a very simple design philosophy on the engineers," Lopresti said. He explained that blocks have to be inserted within the Tiger's structures while applying pressure to bond the skins. The structures have to be of simple design in order to be able to remove the blocks after the process is completed.

"The bonding works very nicely," Lopresti said. "The people who were there with Grumman American had kind of grown up with the airplane and with the basic bonding technique. That wealth of experience is now sprinkled around the country. It's going to be difficult to corral the right kind of technical talent and get it all going again, because people who understand bonding in the lightplane business are really kind of few and far between."

In 1978, Grumman Corporation sold Grumman American and the Gulfstream jet line to American Jet Industries (AJI), a company that specialized in modifying older transport aircraft.

However, AJI, which later changed its name to Gulfstream American, had a pet project: a business airplane with a turboprop engine in the nose and a turbojet engine in the tail, called the Hustler. AJI conceded that it acquired Grumman American primarily to gain production facilities for the Hustler.

As Gulfstream American, the firm stopped building its two-place aircraft, the Lynx and the T-Cat, a few months after acquiring the Savannah facilities, and suspended production of the Tiger, Cheetah and twin-engine Cougar last December. The company simply stated that it believed production of lightplanes was incompatible with its plans for the Gulfstream III and the Hustler.

In January, Gulfstream American announced it was negotiating with International Transport and Earthmoving Equipment Company (ITE) to resume production of the lightplanes in Northern Ireland. ITE is part of the Zwaans Group, an international conglomerate based in Monte Carlo.

Asked if there would be any foreseeable problem in finding qualified people to build the Tiger in Northern Ireland, Alan Lemlein, executive vice president of Gulfstream American, confidently said, "If we can train them here, we can train them there."

ITE aviation division, Southair International, has purchased Gulfstream American's inventory of 214 Tigers and Cheetahs. Southair said it had found a dealer that would sell most of the aircraft in Europe.

Southair's acquisition of Gulfstream American's inventory leaves few new Tigers available for purchase in the United States. Tigers already in the domestic fleet virtually have been grounded recently by a rash of airworthiness directives and service bulletins. Of note is an AD issued by FAA's Southern Region last summer, which originally had ordered owners of Tigers to have an inch cut off of the trailing edges of the ailerons on their aircraft.

FAA said it issued the AD after receiving 33 reports of aileron oscillations. After meeting with Tiger dealers and owners who presented data showing that the oscillation problem was caused by normal wear and tear and could be solved through routine maintenance, the Southern Region admitted it may have over reacted to the problem. The airworthiness directive was revised to require inspections at 100-hour intervals to damage or wear and proper rigging of aileron components, and corrections if necessary.

Despite its somewhat irregular history, those who have been involved in the development and production of the Tiger agree that it is a good airplane that could continue to fare well in the marketplace if brought back into production.—MML