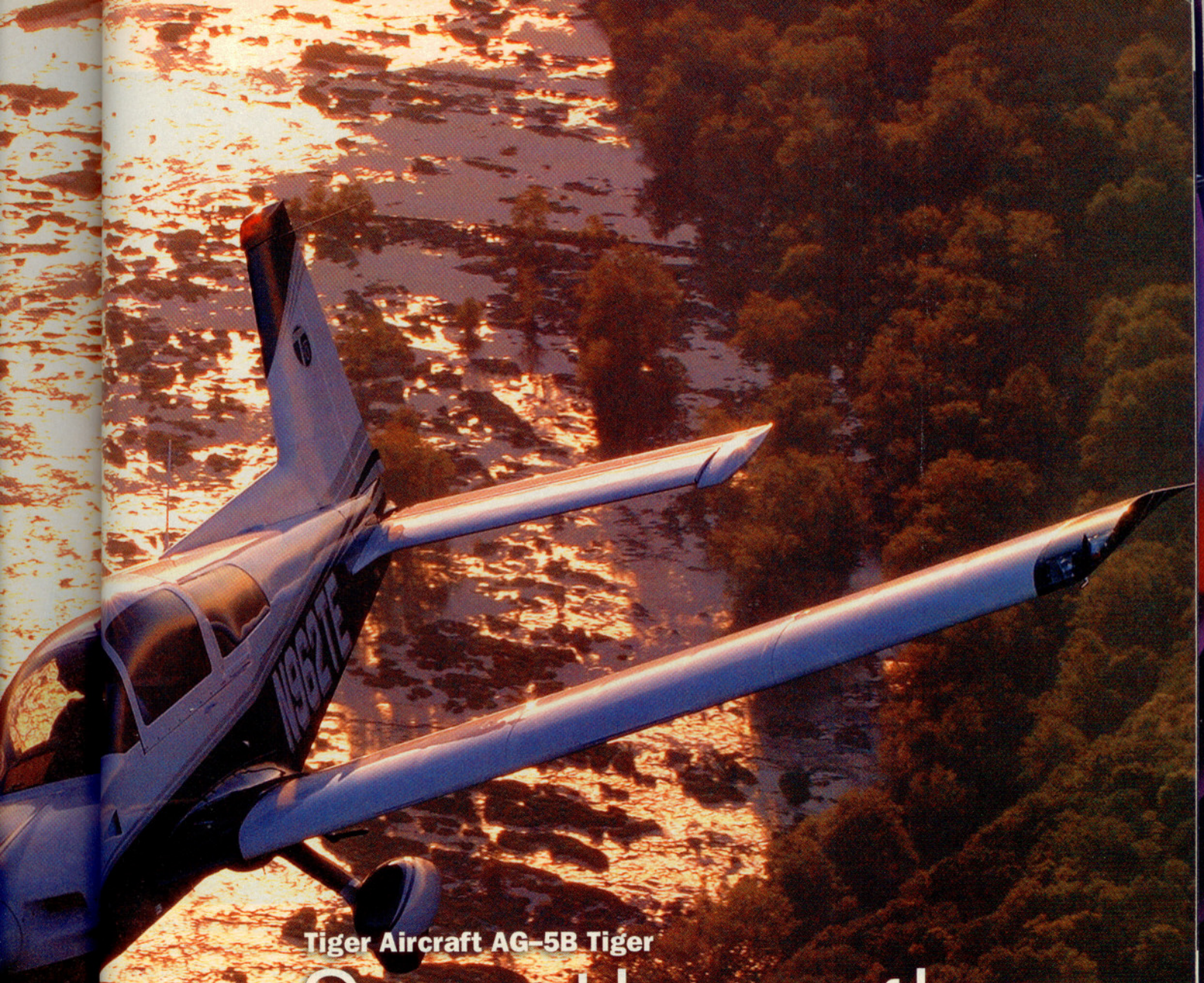


Tiger Aircraft AG–5B Tiger

# Smooth as glass

## The Tiger gets the G1000

BY JULIE K. BOATMAN

"Implementing the G1000 system is the largest and most extensive single change we have made since the AG–5B was introduced," says John Rock, chief engineer for Tiger Aircraft. Rock was an engineer for American General Aircraft Co. (AGAC), and he's referring to that company's debut of the AG–5B, an update to the AA–5 originally built by American Aviation, Grumman American, and Gulfstream American.

The engineering team at Tiger Aircraft hasn't *had* to make many changes to the Tiger, because the airplane is such a capable design. Few in its class of single-engine, fixed-gear four-seaters have its control harmony and balance—not to mention its good speed and climb performance to match.

When Tiger Aircraft formed to relaunch the AG–5B production line, most changes were up front in the radio stack. A full complement of Garmin GPS/nav/coms, an S-Tec autopilot, and options for a slaved horizontal situation indicator (HSI) and Mode S transponder made for a modern-enough panel as recently as 2002, when Tiger's first Tigers left the factory in Martinsburg, West Virginia. But to retain a competitive advantage in 2005, the focus came back to the panel.

PHOTOGRAPHY BY MICHAEL P. COLLINS

With its competitors going to glass, the management team at Tiger quickly determined that course for its airplane as well.

Tiger decided to work with Garmin International and install its G1000 integrated flight deck, with primary flight display (PFD), multifunction display, audio panel, and nav/coms. "It was the only fully integrated system out there," says Gene Criss, president of Tiger Aircraft, "and that's what we wanted." Once the decision was made, the joint Garmin/Tiger team worked with the FAA's aircraft certification office in New York.

## Going digital

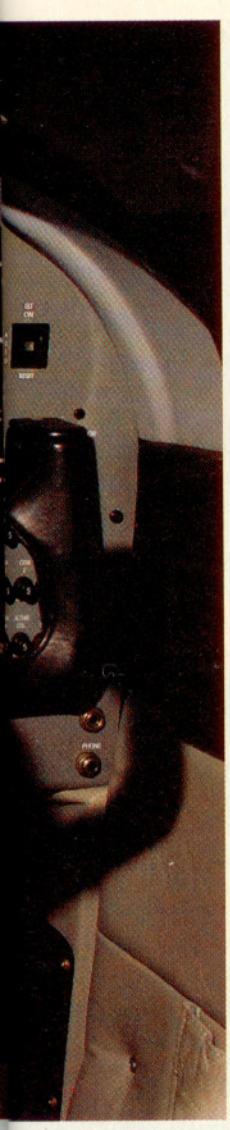
While the airplane's panel had been updated since the 1990s when the aircraft was built by AGAC (see "Budget Buys: An Ambush of Cats," August 2002 *Pilot*), the guts behind it were essentially the same. But that wouldn't fly with the transition to the G1000.

The magnetometer hides under this inspection plate.

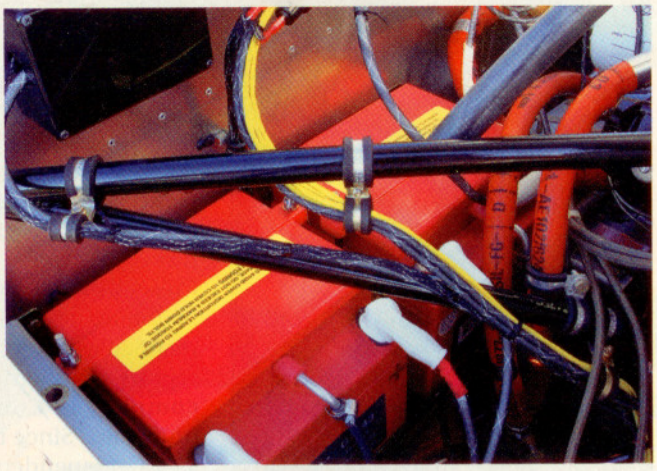
Rock affirms that the most interesting design challenges with the system installation had to do with incorporating a digital sensing system (the heart of the G1000) into an aircraft that had previously used analog gauges. "Lots of surprises," he says. "The most significant had to do with the magnetometer." This device—located in the right wing about a third of the way inboard from the wing tip—provides 3-D magnetic information to the system through the attitude heading reference system (AHRS). "The grounds for all wing wiring had to be relocated to prevent electromagnetic interference just above the tolerance of the G1000 system," says Rock. "The lights were grounded in the wing and the grounds had to be routed back to the fuselage."

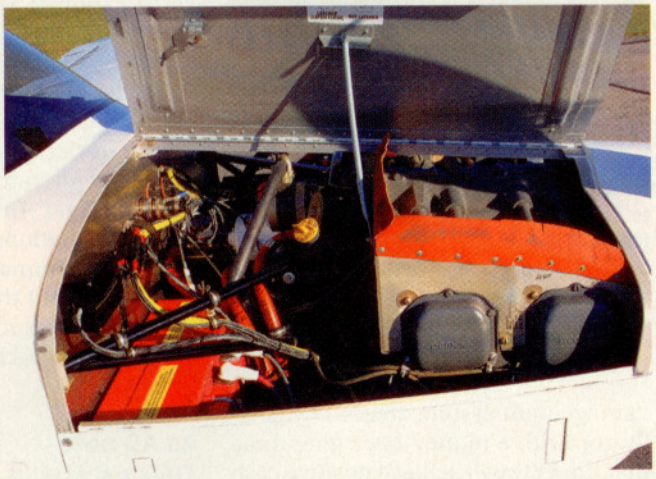
The G1000 includes the primary flight instruments (including attitude indicator, HSI, and airspeed, altitude, and vertical speed tapes) as well as all engine instruments (oil pressure and temperature, cylinder head temperature, and exhaust gas temperature) and electrical system instruments. Therefore, as part of certification, the system requires a robust "plan B"—including a source of backup power and several self-contained backup analog instruments. Tiger has done an excellent job of addressing both FAA concerns, which should rank high on a pilot's list of needs as well.

Providing for emergency backup power is a part of FAA certification of glass-cockpit systems because of the critical nature of the electrical system



To provide a backup power source, Tiger added a second full-size battery (below). The cowl can be easily opened during preflight for close inspection (below, bottom). Backup instruments are well located in between the two glass displays (left).





to flight safety—though the standby attitude indicator is vacuum powered. Because the main ship's battery is used for starting, a separate backup battery is required, according to Rock.

The goal for the engineering team was to provide power to the critical flight instruments (including the PFD and its components such as the AHRS and air data computer, one nav/com, transponder, instrument lighting, and audio panel) for at least 30 minutes. To put this one through the uprights, the team installed a second battery of the same size and power as the standard aircraft battery. During testing, the battery ran the essential systems for more than an hour—with the mic keyed at five-second intervals throughout the test.

## Riding the Tiger

It's easy to like flying the Tiger, because of its honest speed for the economical 180 horsepower, excellent visibility from the cockpit, and feel-good flight agility.

I conducted speed runs during my latest flight test at various altitudes to try to match those found by veteran air racers—and the factory. We reported 132 knots true airspeed (KTAS) in the last look at the Tiger (see "Leaping Back to Life," February 2002 *Pilot*) at both 8,500 and 10,500 feet, at full throttle.

Maybe the warmer air (by a few degrees Celsius) made all the difference, or maybe N962TE is just a little speedier than that first new Tiger I flew more than three years ago, but today's Tiger posted a couple of extra knots compared to the test flight in 2001.

At 7,500 feet and 75-percent power, we averaged 137 KTAS, and saw almost the same figures at 5,500 feet, on a fuel burn of about 10.9 gph. Those are still off Tiger's advertised figures at 8,500 feet (143 KTAS), but they're in the ballpark. And perhaps there are Tigers out there running that swiftly. (My thought: You would expect to see some gains in aircraft fit and finish as the production line crew acquires more experience.)

Climb rates were healthy from sea level on up to those altitudes, starting at 800 fpm and dropping off to 500 fpm by the time we came over the top of 7,500 feet. Coming down at best glide (73 knots)—which you can maintain using nearly full nose-up trim—brought us back to Earth at roughly 800 fpm.

Stalls were benign, with no wing drop noted, just a slight shake of the tail and gentle mush into a loss of altitude. The fun began when we turned to exercising the airplane through a series of coordination maneuvers, steep turns, and slips. Throttling back to bring the airspeed down to

100 knots, I banked the wings rapidly left and right—the challenge being to apply just enough rudder at just the right time to keep the nose in place on the horizon. The Tiger responded well, showing excellent control harmony—it takes about as much aileron and rudder through the maneuver as you might expect: an easy touch on the ailerons matched by solid but even pressure on the rudder pedals. And because you're sitting right on top of the rugged tubular main spar, you might get the sensation, as I did, of flying through the air cupped in a backyard swing. It's comfortable, and comforting, while retaining that feeling of flying freedom we so crave.

Lazy 8s felt similarly good for the same reasons. This is an airplane that wants you to take it out of straight and level, no matter what your mission for the day—stretching those muscles reminds you of why you have them in the first place.

Bill Crum, vice president of sales and production test pilot for Tiger Aircraft, was flying with me, and he egged me on to slip the airplane as much as I wanted—no doubt because the Tiger slips so well and can do so with full flaps.

My landing distance (about 2,000 feet) the first time around nearly matched my takeoff distance on the warm, early September afternoon. But it's likely that with practice, pilots can easily land shorter simply by not carrying quite as much airspeed or raising the nose quite so much as I did. The Tiger is an airplane you fly onto the runway, holding the nose off only slightly, rather than in a distinct flare.

## Show me the money

Letsfly.org, which functions as one of Tiger Aircraft's dealers, offers one-quarter "cooperative ownership" shares in a new G1000-equipped Tiger for an initial investment of $2,900, with a monthly management fee of $595 and per-hour costs of $55 to $65 per hour, including fuel, depending on where in the country the aircraft is based.

Eldon Corry is the general manager of Letsfly.org, which has placed 12 Tigers into the program. Corry developed the program to help "put the mom-and-pops back on the map," he says. An initial investment of $8,700 covers the down payment on the glass-cockpit Tiger for a local pilot or FBO. An additional $4,700 buys the management system created by Letsfly.org, with a money-back guarantee that the FBO will achieve positive cash flow on its investment. As the FBO sells its shares (at the $2,900 price), the monthly management fee from each owner goes to the FBO to cover the financing on the airplane, which comes to a little more than $2,000 a month on a 20-year term loan. Most aircraft in the program are covered under a commercial insurance policy, which allows for Letsfly.org program shareholders to fly other airplanes in the program around the country. Current locations include Truckee, California; St. George, Utah; and Phoenix.

Other financing options make the $274,500 total price tag a little easier to swallow (an IFR-equipped Tiger with traditional instruments runs $239,500). An agreement with AirFleet Capital Inc. has led to several programs, including one in which buyers can fully finance a G1000-equipped Tiger for roughly $2,000 a month (obviously, with ever-changing financing rates and terms, your mileage will vary).

**The backseats are cozy but comfortable (above). Differential braking is used to steer the full-castering nosewheel (right).**

Tiger also offers free flight lessons through your private certificate if you're not already rated. The company thinks the airplane is a good one for a new pilot, and I agree.

## Changes at the top

Criss was made president of Tiger Aircraft in summer 2003 after serving as the company's chief operating officer. Former president Bob Crowley retained positions as chairman and chief executive officer until mid-2004, but is no longer with the company. Criss was formerly president and CEO of Commander Aircraft until 1998, and retained a position on the board of directors for Aviation General (parent company to Commander Aircraft) until 2002. Since then, he has worked as an independent contractor on the certification of Micco Aircraft's three single-engine models (now on the shelf after that company's plans dissolved). He has also served in executive capacities at Piper Aircraft Co. and American General Aircraft Co.

Tiger Aircraft went through negotiations to purchase the ailing Commander Aircraft Co. in 2004, but those discussions fell through and the owners of Tiger Aircraft backed out of the deal in July 2004.

## An AD note

The new AG–5B retains most of its similarities in aircraft parts symmetry and construction as the early models (the airplane is built using a unique bonding method that joins the aluminum skin to the ribs with adhesive rather than rivets). But with the new production line, some wrinkles in the process have been smoothed out.

> **i** Links to additional information about Tiger Aircraft may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

For example, an airworthiness directive on the aircraft's wing attach shoulder bolts doesn't apply to serial numbers higher than 10175—all Tiger models built since 2001. The Tiger's flying higher than ever, and with the new glass up front, into the heat of the pack. AOPA

*E-mail the author at julie.boatman@aopa.org.*


## SPECSHEET

### Tiger Aircraft AG–5B Tiger

**Base price: $239,500**
**Price as tested: $276,200**

#### Specifications

| | |
|---|---|
| Powerplant | Lycoming O-360-A4K, 180 hp @ 2,700 rpm |
| Recommended TBO | 2,000 hr |
| Propeller | Sensenich, 2 blade, 76-in dia |
| Length | 22 ft |
| Height | 8 ft |
| 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 |
| Cabin length | 4 ft 2 in |
| Cabin width | 3 ft 4 in |
| Cabin height | 3 ft 10 in |
| Empty weight, as tested | 1,592 lb |
| Max gross weight | 2,400 lb |
| Useful load, as tested | 808 lb |
| Payload w/full fuel, as tested | 502 lb |
| Fuel capacity, std. | 52.6 gal (51 gal usable) 315.6 lb (306 lb usable) |
| Oil capacity | 8 qt |
| Baggage capacity | 120 lb, 17.6 cu ft |

#### Performance

| | |
|---|---|
| Takeoff distance, ground roll | 865 ft |
| Takeoff distance over 50-ft obstacle | 1,550 ft |
| Max demonstrated crosswind component | 15 kt |
| Rate of climb, sea level | 850 fpm |
| Maximum level speed, sea level | 148 kt |
| Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) 8,500 ft @ 75% power, best economy | 143 kt/4 hr (10.7 gph) |
| Service ceiling | 13,800 ft |
| Landing distance over 50-ft obstacle | 1,120 ft |
| Landing distance, ground roll | 410 ft |

#### Limiting and Recommended Airspeeds

| | |
|---|---|
| $V_X$ (best angle of climb) | 80 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 |
| $V_R$ (rotation) | 55 KIAS |
| $V_{S1}$ (stall, clean) | 56 KIAS |
| $V_{SO}$ (stall, in landing configuration) | 53 KIAS |

*For more information, contact Tiger Aircraft LLC, 226 Pilot Way, Martinsburg, West Virginia 25402; telephone 877/306-8100 or 304/267-1000; fax 304/262-0069; or visit the Web site (www.tigeraircraft.com).*

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