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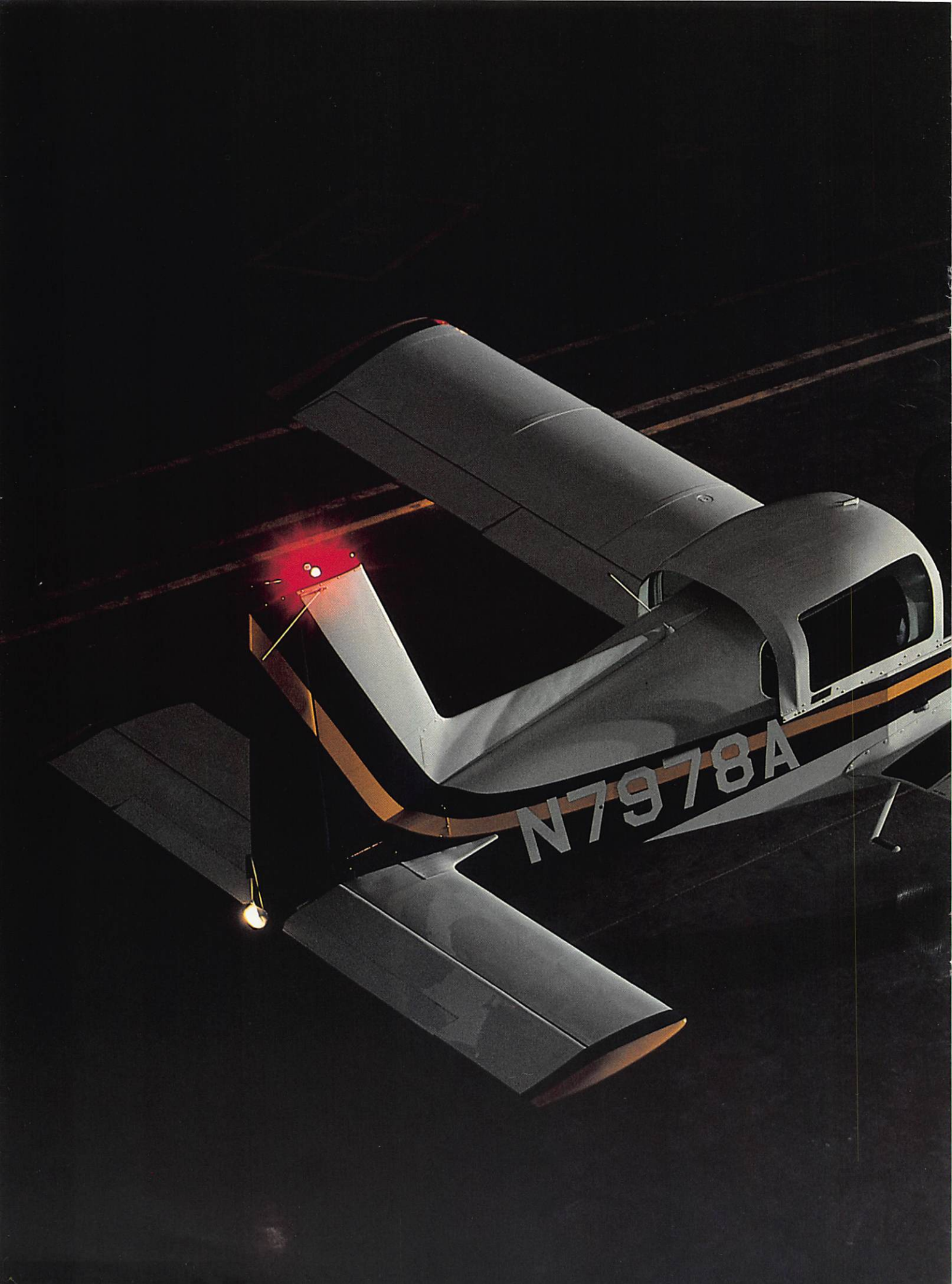
The New Tiger


N7978A

Tiger II

The rebirth of the Tiger proves that good designs need not die.

BY THOMAS B. HAINES

N7978A is not the first Tiger. But it is the first aircraft built by American General Aircraft Corporation (AGAC), and it is the first certified airplane ever constructed in Mississippi. Of that the people at AGAC and of Greenville, Mississippi, are justifiably proud. Enthusiastic federal, state, and local government officials re-

PHOTOGRAPHY BY MIKE FIZER

cently lined up to shake the hands of AGAC employees during rollout ceremonies for the airplane. Also present at the rollout were hundreds of members of the American Yankee Association (AYA), whose suggestions resulted in a number of improvements to the new aircraft from the days in the late 1970s when Grumman-American and then Gulfstream American (later Gulfstream Aerospace) built the spunky four-seater. American Aviation designed and built the first of the line in the early 1970s.

But of those present on April 21, no one could have been more proud than James E. Cox, president and founder of AGAC. Cox had been looking forward to that moment since early 1987 when he first began sketching out plans to buy the type certificates for the line of singles and the Cougar twin built by Grumman-American. Grumman sold the line to Gulfstream in 1979. The new owner stopped production of the singles soon thereafter; the Cougar survived only about a year longer.

After much negotiating with Gulfstream, vendors, financial backers, and real estate agents, Cox closed the deal in July 1989 and immediately set about building the first new airplane at a mammoth complex at the Greenville Municipal Airport. The rollout of N7978A occurred just 9 months 21 days later. Boeing Aircraft built the plant in the mid-1980s and later moved out, turning the facility over to the city. All in all, AGAC has leased 497,000 square feet of space at the airport.

In addition to the type certificate for the 180-horsepower, Textron Lycoming-powered Tiger, AGAC also owns the rights to the four-seat, 150-hp Cheetah, the two-seat AA–1, and the Cougar. For now, the company is concentrating on spooling up Tiger production and has no immediate plans to reintroduce other models, although a study of the marketability of the Cougar and a more powerful Tiger are ongoing.

Few changes to the new Tiger are evident during a quick walk-around. The landing light has been moved. Instead of one light in the nose cowling, the new Tiger has a landing light on the leading edge of each wing, near the tip. In their new locations, the lights suffer fewer damaging vibrations.

The original Tiger's McCauley propeller has been replaced with one by Sensenich. The change does away with the need for 200-hour inspections on the McCauley, and it deletes the yellow arc

on the tachometer that restricted continuous operation between 1,850 and 2,200 rpm. Another obvious change is the tail-mounted beacon. The new aircraft carries a slick, faired-in version, instead of the old beacon that resembles an inverted juice glass.

A more careful look, though, reveals a number of less obvious changes. Mechanics and owners have praised the low maintenance requirements of the aircraft. And when something does go wrong, the Tiger, with lots of room under the cowling, is generally easy to fix. To make things even easier on the mechanic, AGAC has changed to a "split-bowl" nose cowling. On the original aircraft, the front 6 inches of the cowling could not be removed without taking off the prop. Something as simple as changing an alternator might require removal of the propeller, Cox explains. AGAC changed the design of the cowling so that it can be entirely removed by taking out a dozen screws.

Throughout the airframe, much of the original plastic has been replaced by more rugged fiberglass, most noticeably on the main-gear wheel covers and on the dorsal fin.

Inside the Tiger's cockpit, the changes made by AGAC are more obvious. The four seats have been slightly redesigned with added padding and, of course, modern colors and fabrics. With safety in mind, AGAC has installed five-point harnesses for each of the two front seats. The harnesses will be standard on all aircraft, Cox says. A newly designed throttle quadrant, somewhat like those aboard Pipers, takes the place of the original push-pull controls. The trim control, located between the front seats, has been moved forward a bit for better access. A black, all-metal panel replaces the plastic one of the 1970s.

A number of flight instruments have been moved to simplify the instrument scan. Modern electronic engine gauges, now including a cylinder head temperature gauge, replace the mechanical ones of yesteryear. Even the outside air temperature gauge is electronic. To better support all of the electronics and those that are sure to come in the future, AGAC replaced the original Tiger's 12-volt electrical system with a 24-volt system. Among other things, the new system will support air conditioning, which Cox believes new pilots will want. "We can't expect people who live in air-conditioned houses and drive to their air-conditioned offices in air-conditioned

cars to swelter through training in a 120-degree cockpit," Cox says.

Another electric addition to the 1991 Tiger is the engine priming system. Instead of the plunger-type primer found aboard many aircraft, AGAC has designed an electric version. With the boost pump turned on, the pilot simply pushes a red button on the panel for a few seconds to prime the cylinders.

N7978A's avionics were built by ARC, which no longer exists. Sigma Tek, Incorporated, now owns the rights to the ARC line of radios as well as the inventory that remained when the company was sold.

The avionics in the Tiger panel carry an AGAC nameplate under an experimental marketing arrangement with Sigma Tek. Cox and Sigma Tek's vice president, William Carlon, explain that the program is still being developed. The potential partnership does not limit the Tiger buyer, however. AGAC will install any brand of avionics selected by the customer, Cox says.

Several small changes may be made to subsequent aircraft. The flap control and position indicator, located on the center console, may be moved to the panel. In its current location, the switch can be damaged if the canopy is opened in the rain or if the canopy leaks. Also, the position indicator is hard to see on the console. Air and water leaks around the sliding canopy were a frequent and nagging difficulty in the original aircraft. Modern sealing-strip materials that stay flexible solve the problem, Cox says.

Fill the Tiger's seats and tanks and still have more than 100 pounds of payload left for baggage.

As for the fuselage and wings, AGAC left well enough alone. The slick, rivetless, bonded-metal wing skins, aluminum honeycomb cockpit frame, and tubular wing spar serve the aircraft well.

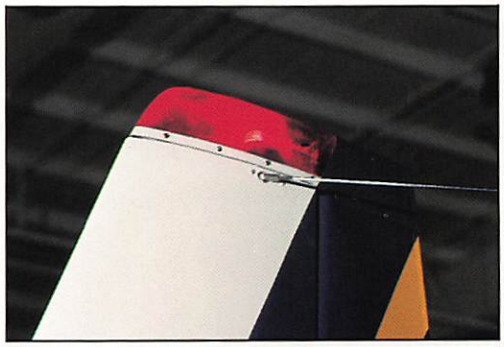
Cox admits the changes inside and outside the airplane do little to improve performance. But increasing performance was not a goal. The idea was to modernize an already efficient airplane. Walter Porter, president of AYA, says he cruises at between 125 and 130 knots true airspeed at about 70-percent power in his 1979 Tiger.

In a flight over the wide Mississippi River with full fuel and Cox and me on board, the new Tiger cruised at 118 KTAS at 2,000 feet msl at 2,400 rpm, 64-percent power, and 8.7 gallons per hour. At 2,550 rpm, 76-percent power, the speed jumped to 129 knots. Fuel burn climbed to 10.2 gph. Besides the remarkable performance, the Tiger is one of the few singles where you can fill the seats and tanks and still have more than 100 pounds of payload left for baggage. Payload with full fuel is 783 pounds.

Climbing off the runway at Greenville Municipal at 90 knots, the new Tiger easily made 700 feet per minute. The airplane climbs in a relatively flat attitude, and the view is spectacular. AGAC has improved cabin heating and cooling, but if the greenhouse effect still overpowers the forced-air cooling, just pop open the canopy a few inches, as long as your speed is below the limit of 113 knots. The noise level obviously goes up, but you feel like you're driving a Corvette convertible. Because the cowl-

Tiger II

The Tiger combines a simple tubular wing spar with sophisticated metal bonding and aluminum honeycomb to form a strong, yet light airframe (below). Among other improvements is a faired-in beacon mounted on top of the aircraft's tail (right).



ing slopes nearly out of sight when the airplane is in level cruise attitude, visibility outside the cockpit is excellent.

As you might expect out of such a nimble machine, the controls are light and responsive. At minimum controllable airspeed, about 55 knots, the ailerons and rudder maintain their authority. The airplane seems as content here as in cruise.

Approaching the runway at Greenville, Cox reminds me that about the only way to botch a Tiger landing is to bring it in nosewheel first, which of course no airplane appreciates. The Tiger uses an unusual S-shaped nose-gear strut constructed of spring steel. The nosewheel is free castoring, and steering on the ground is done by the use of brakes only. In addition, the Tiger's flaps create little drag, and the airplane descends in a flat attitude. The result is that some inexperienced Tiger pilots tend to try to land too fast, the consequence being a long float down the runway. Attempts to force the airplane down can cause it to porpoise on the springy nose gear. If left unchecked, the porpoise can seriously damage the prop and nosewheel. To reduce the likelihood of such an incident among new Tiger pilots, AYA, located in Cameron Park, California, offers a Pilot Familiarization Program. The PFP is a formal training program administered by AYA instructors around the country. Those who complete it in the first 30 days after purchase get a 10-percent rebate on the association's group insurance plan.

Heeding Cox's reminder, I carefully monitor the Tiger's speed approaching Greenville's wide and long runways. Seventy knots until over the numbers works fine, even with a moderate crosswind thrown in. My first landing conveys all the subtlety of an aircraft carrier arrival, but the second time around, I manage a squeaker.

About the only time I notice the Tiger's lack of nosewheel steering is in slowing down after touchdown. There is a moment during the rollout when the rudder loses its effectiveness, yet I still feel we are going too fast to be applying differential braking to keep the airplane tracking straight. Cox assures me that after a couple of flights, the castoring nosewheel is as easy to use as a steerable system. In slow taxi, the gear poses no problem. Because all steering is done with the brakes, Tiger pilots may have to replace them more often than on some other aircraft. But the unusual nose gear will allow the airplane to turn around in an area the size of its own wingspan.

Cox is using N7978A as a demonstrator. He planned to deliver the first two aircraft to customers by the end of May. AGAC actually is acting as an assembler. It has farmed out most parts fabrication to vendors. AGAC's 65 employees concentrate on assembly and finish work, Cox says. The system minimizes AGAC's tooling and labor costs.

According to Cox and Chairman and CEO Robert E. Crowley, the company can break even when it is building six aircraft a month. Vendors say they can be delivering the parts for six aircraft a month by around October.

Cox runs the assembly operation on a day-to-day basis while Crowley, a Greenville native, manages the financial affairs. AGAC is owned by a group of investors, many from the Greenville area. Gulfstream maintains a minority interest in the company. Former Cessna

executive Gordon Gettings is now an executive vice president at AGAC and handles fleet marketing of the Tiger.

Cox has lined up 30 dealers and expects to be adding to the list. He already has orders for 50 aircraft and has stopped taking new ones until he is able to increase production. The first 50 aircraft sold for $81,400. The next batch will list for about $88,900, which includes instruments but no avionics. The addition of basic avionics, including a nav/com with VOR and localizer, loran, audio panel, marker beacon, and transponder with blind encoder, will drive the price to about $100,000, according to Cox. With an S-Tec System 40 single-axis autopilot installed, the price would be about $105,000, he estimates.

In addition to new aircraft, AGAC is planning to open a modification shop where owners of existing aircraft can take advantage of the improvements developed for the new airplanes. AGAC also has many parts on hand for the entire Grumman series and plans to produce additional parts.

AGAC's modification plans and parts production is good news to the members of the owners association, according to AYA's Porter. "Our aircraft have been orphans for 10 years, and now we will get the support we need."

Porter says members are eagerly awaiting the chance to improve their airplanes and to purchase new ones once production is increased. The owners of existing Tigers are staunch supporters of the marque. They learned long ago that the Tiger is a straightforward airplane with a lot of personality both in appearance and handling. It serves up spicy performance without the heartburn of complex systems. Simple pleasures. □

American General Aircraft Corporation
Post Office Box 5757
Greenville, Mississippi 38704
601/332-2422

American General Aircraft AA-5B Tiger
Base price: $88,000

Specifications

Powerplant	Lycoming O-360-A4K, 180 hp at 2,700 rpm
Recommended TBO	2,000 hr
Propeller	Sensenich, two-blade, 76-in diameter
Length	22 ft
Height	7.83 ft
Wingspan	31.5 ft
Wing area	140 sq ft
Wing loading	17.1 lb/sq ft
Power loading	13.3 lb/hp
Seats	4
Cabin length	7.08 ft
Cabin width	3.33 ft
Cabin height	3.83 ft
Empty weight	1,548 lb
Max ramp weight	2,408 lb
Gross weight	2,408 lb
Useful load	1,089 lb
Payload w/full fuel	783 lb
Max takeoff weight	2,408 lb; utility, 2,058 lb
Max landing weight	2,408 lb
Fuel capacity	51.2 gal (51 gal usable) 307 lb (306 lb usable)
Oil capacity	8 qt
Baggage capacity	120 lb

Performance

Takeoff distance, ground roll	1,083 ft
Takeoff distance over 50-ft obstacle	1,926 ft
Max demonstrated crosswind component	16 kt
Rate of climb, sea level	850 fpm
Max level speed, 8,500 ft	139 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ 75% power, best economy 8,500 ft	139 kt/3.97 hr (64.8 pph/10.8 gph)
@ 65% power, best economy 8,500 ft	129 kt/5.04 hr (52.8 pph/8.8 gph)
Max operating altitude	13,800 ft
Landing distance over 50-ft obstacle	1,499 ft
Landing distance, ground roll	450 ft

Limiting and Recommended Airspeeds

Vx (best angle of climb)	70 KIAS
Vy (best rate of climb)	90 KIAS
Va (design maneuvering)	113 KIAS
Vfe (max flap extended)	104 KIAS
Maximum canopy open	113 KIAS
Vno (max structural cruising)	143 KIAS
Vne (never exceed)	174 KIAS
Vr (rotation)	60 KIAS
Vs1 (stall, clean)	56 KIAS
Vso (stall, in landing configuration)	53 KIAS

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.

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