



Grumman-



The Little
Big Bird
has a
huge
following

American Cheetah

By Bill Cox

Photography By James Lawrence

It doesn't happen very often, but once in awhile, an airplane comes along that represents, if not a quantum leap in the state of the art, at least a major improvement. These days, the Cirrus Design SR20/22, Lancair Columbia and Piper Meridian are at the head of that class, but 25 years ago, the Grumman-American Cheetah and Tiger were among the most innovative light aircraft in the industry. Constructed of aluminum honeycomb composites with bonded skins, tube steel spars and sliding canopies, the Grumman-American four-seaters were nothing if not different.

Unfortunately, conservatism is often regarded as its own virtue in aviation. The innovative GA Cheetah and Tiger may have been a little ahead of their time, and enjoyed a production run of only five years. Though Grumman-American's AA5A and AA5B models certainly weren't without fault, they probably deserved better than they got.

Perhaps for that very reason, both airplanes have become semi-cult classics. Early Tigers now sell for double what they cost new, and Cheetahs bring 30% to 40% more than their average-equipped new price. Okay, so those numbers aren't corrected for inflation, but that's still good economic performance.

The Tiger, with its more powerful 180-hp engine, has stolen most of the spotlight since the two models went out of production 22 years ago. So far, two companies have attempted to revive the model, and a third, Tiger Aircraft LLC (a division of foreign investor Tung Long Metal) has built a plant in Martinsburg, W.Va., hoping to have its first production model in

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the air in time for Oshkosh 2001. To avoid the staggering certification costs that plagued Lancair and Cirrus, Tiger Aircraft plans to build the "new" airplane in the original configuration, then update and improve the Tiger after it has reestablished itself on the new-plane market.

The Cheetah remains something of an orphan, cast in the shadow of its more powerful big brother and, perhaps sadly, there are no plans for a Cheetah resurrection. Still, the AA5A is hardly unloved. Grumman-American built some 900 examples of the sporty little Cheetahs between 1976 and 1979, and the type remains extremely popular on today's used-plane market.

Both the Cheetah and Tiger sprang from the original boxy, 150-hp GA Traveler, essentially a scaled-up version of the AA1 Trainer—which, in turn, evolved from Jim Bede's controversial Yankee. Grumman wanted more performance from the Traveler, so it handed the assignment to one of the world's ultimate speed gurus: Roy Lopresti.

Despite minimal financial support from Grumman, a prominent military contractor that probably regretted ever venturing into the little-airplane business in the first place, Lopresti and a dedicated team of engineers in Savannah worked to improve the line within the constraints of the Trainer's original design, utilizing the same high dihedral NACA 64(2)415 airfoil and 22-foot fuselage. Lopresti's task force whittled away at the Traveler's drag, redesigned the cowl, reshaped the tail and generally tweaked the existing airframe to wring every available knot of airspeed from the AA5 without increasing production incorporation costs inordinately.

While they were at it, Lopresti and his merry band of moonlighters added 30 horsepower out front and increased fuel capacity from 37 to 51 gallons. When the finished production Tiger was pushed out the door in 1975, it was a very different airplane from the Traveler. Despite having only 180 hp out front and fixed gear hanging beneath, the Tiger offered nearly the climb and cruise capability of some 200-hp retractables.

The Cheetah came along a year later, essentially a Tiger from the firewall aft, retaining the Traveler's original 150-hp Lycoming O-320 engine and 37-gallon fuel capacity, cleverly stored in the tube steel wing spars (bigger tanks were optional), but offering five knots more speed as a result of Lopresti's slicking and fairing. Book cruise speed was listed at 128 knots, and though that may have been slightly optimistic, there was little question the Cheetah could run away from comparably powered Beech Sports, Piper Warriors or Cessna Skyhawks. The

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1976 GRUMMAN-AMERICAN CHEETAH N9921U

SPECIFICATIONS

Base/used price: \$36,000
Engine make/model: Lycoming O-320-E2G
Horsepower@altitude: 150@SL
Horsepower for takeoff: 150
TBO hours: 2000
Fuel type: 100/100LL
Propeller type: McCauley FP
Landing gear type: Tri/Fixed
Max ramp weight (lbs.): 2200
Gross weight (lbs.): 2200
Landing weight (lbs.): 2200
Std. empty weight (lbs.): 1262
Useful load - std. (lbs.): 938
Payload - full std. fuel (lbs.): 716
Usable fuel - std. (gals.): 37
Oil capacity (qts.): 8
Wingspan: 31 ft. 6 in.
Overall length (ft.): 22
Height: 7 ft. 10 in.
Wing area (sq. ft.): 140.1
Wing loading (lbs./sq. ft.): 15.7
Power loading (lbs./hp): 14.7
Wheel base (in.): 5 ft. 5 in.
Wheel track (in.): 8 ft. 3 in.
Wheel size (in.): 6.00 x 6
Seating capacity: 4
Cabin doors: 0
Cabin width (in.): 41
Cabin height (in.): 48
Baggage capacity (lbs./cu. ft.): 120/12

PERFORMANCE

	ALTITUDE	SPEED
Cruise speed (knots):		
75% power:	8500	128
65% power:	8500	118
55% power:	10,500	107*

Max range (w/reserve, std. tanks) (nm):		
75% power:	8500	400
65% power:	8500	415
55% power:	10,500	440

Fuel consumption (@ .42 lbs./hp/hr sfc) (gph):		
75% power:	7.9	
65% power:	6.8	
55% power:	5.8	

Estimated endurance (65%) (hrs.): 5.4
Stall speed (flaps up) (kts.): 54
Stall speed (flaps down) (kts.): 51
Best rate of climb, SL (fpm): 660
Service ceiling (ft.): 12,650
Takeoff ground roll (ft.): 880
Takeoff over 50-ft. obstacle (ft.): 1600
Landing ground roll (ft.): 380
Landing over 50-ft. obstacle (ft.): 1100

*estimated





Sport, Warrior and Skyhawk professed book cruise speeds of 107, 118 and 122 knots, respectively.

Speed wasn't the Cheetah's only qualification. The sliding hatch imparted a sportiness none of the others could match. Visibility was significantly better than the competition, and you could even fly with the canopy slid back a few inches. (I once flew a new Tiger in formation with a Cheetah photo ship with the hatch full aft to facilitate photography. We never considered what might have happened if the canopy had come off and gone through the tail.)

Entry/egress into the cockpit with the entire roof slid back out of the way was almost ridiculously simple (provided you weren't wearing a skirt). Unfortunately, the open roof also let in rain and snow—



Cheetahs and Tigers rolled out of the factory as IFR-capable aircraft. In addition to the surprisingly spirited elevator and aileron response, a pilot new to the Grumman designs would have to spend a few minutes getting used to the non-steerable, free-castering nosewheel.

FACTORY COMPARISON

	GA CHEETAH AA5A	PIPER WARRIOR PA-28-151	CESSNA SKYHAWK 172M	BEECH SPORT B-19
Base/Used Price (1976 model):	\$36,000	\$42,500	\$49,500	\$28,500
Cruise Speed, 75% (kts.):	128	118	122	107
Stall Speed, Dirty (kts.):	51	47	44	50
Fuel Burn, 75% (gph):	7.9	7.9	7.9	7.9
Climb Rate (fpm):	660	660	645	680
Service Ceiling (ft.):	12,650	12,700	13,100	11,650
Takeoff Distance (ft.):	880	1065	865	1030
Landing Distance (ft.):	380	595	520	824
Useful Load (lbs.):	838	999	965	736
Power Loading (lbs./hp):	14.6	15.5	15.3	14.3
Engine Horsepower:	150	150	150	150
Propeller Type:	FP	FP	FP	FP
Landing Gear Type:	Tri/Fixed	Tri/Fixed	Tri/Fixed	Tri/Fixed
Fuel Capacity (gals.):	37	48	42	60
Seat Capacity:	4	4	4	4

Source: Jane's All The World's Aircraft, 1976-77



not such a wonderful idea. Cheetah and Tiger owners learned to tolerate the airplane's minor foibles in exchange for its considerable benefits.

One of those benefits was a well-designed, airy cockpit. The panel was well laid out and logical, with a two-tank fuel system and a selector that pointed at the fuel gauge for the tank in use. Cabin airflow was obviously optimized during taxi with the hatch open. The Cheetah featured unusually agile handling, both on the ground and in the air. The curved, tube steel nosegear was non-steerable and full-castering, so asymmetric braking was the only method of steering on the ground. Still, the resulting turning radius was little more than the airplane's wingspan, even without locking a wheel and scuffing a tire. Taxiing a Cheetah is always fun, especially when someone else is paying for the brakes.

The Cheetah's weakest suit is take-off and climb performance. Grumman-American listed the airplane at 660 fpm, but owners suggest that's definitely a best-case scenario. Most plan on no more than 500 fpm from sea level. Service ceiling is a low 12,650 feet, so climb rate above about 5,000 feet is minimal. One trick we've heard of, but haven't tried, is extending one-third flaps for takeoff and climb. This technique isn't in the book, but some Cheetah owners claim it improves climb by 100 fpm. Even so, that still would leave the airplane marginal for anything but the bottom 7,000 feet of sky.

As partial compensation, the Cheetah outhandles everything in its class. Like the two-seat AA1, simply known as the Trainer, both the four-seat models feature rapid roll rates and enthusiastic pitch response, better than virtually any other normal-category airplane. The lighter Cheetah has the quicker ailerons and faster elevator. (The Tiger, with its slick aerodynamics and 30 extra horsepower, cried for aerobatic certification—à la the Sundowner and E33C Bonanza—but Grumman-American wasn't interested in the expense or the liability. I have it on excellent authority, however, that the Tiger is fully capable of the gamut of standard, inside maneuvers—rolls, loops, hammerheads and the like.)

Cheetahs couldn't carry much in terms of payload unless fuel load was minimized. A typical Cheetah with a gross weight of 2,200 pounds sported an empty weight of 1,450 pounds. This left 750 pounds for fuel, folks and baggage. Subtract the stan-

ard 37 gallons, and you were left with 528 paying pounds, enough for two full-sized adults plus all the baggage they could pack inside. If the airplane was fitted with the Tiger's 51-gallon tanks, cabin allowance shrank to 444 pounds, still adequate for two plus luggage.

Cockpit dimensions were reasonably accommodating—41 inches across at the elbows, an inch narrower than a Bonanza, so pilots broad of shoulder or hip needed to be good friends. If the payload did allow for full fuel, the standard 37-gallon tanks were sufficient for four hours plus reserve at 75% power. Pull back to 55% and you could add an extra hour to endurance. For Cheetahs fitted with the optional 51-gallon, long-range tanks, endurance at max cruise was 5.5 hours, a kidney-stretching 7.5 hours at 55%.

If performance and handling were well ahead of the pack, stalls weren't quite as much fun (or perhaps they were too much fun). The break was more abrupt, and a Cheetah that was provoked into a deep stall would spin, though the type's safety record doesn't suggest stall/spin accidents were a major problem.

Landing a Cheetah is perhaps a little more demanding than grounding a Warrior, Sport or Skyhawk, but it's hardly a challenge for a reasonably adept pilot. The flaps are small and relatively ineffective, reducing stall only from 54 to 51 knots, so approaches in any configuration work well at speeds from 65 to 75 knots. The Cheetah, like the Tiger, is a floater, however, so plan on consuming plenty of horizontal asphalt if speed down final is faster than 75 knots.

Unlike many older airplanes, the Tiger and Cheetah haven't attracted much attention from modifiers, at least until recently.

O&N Aircraft of Factoryville, Pa., has offered long-range tanks (18 additional gallons) for several years. Air Mods NW in Washington state offers prop and oil-cooler improvement, but it seems no one has been willing to take on the task of making the GA singles fly faster with speed mods.

Who better to front a cleanup program than the father of the designs, Roy Lopresti? After his time at Grumman-American, Lopresti moved to Texas to create the world-beater Mooney 201, relocated to Wichita to head the Beech Starship certification effort and, most recently, formed his own engineering/mod company, Speed Merchants, in Vero Beach, Fla.

"We felt we did a pretty fair job on the aerodynamic cleanup of the Cheetah, but inevitably, we've learned a lot in the last 25 years," says Lopresti. "Cowling design is especially important to an airplane, and we decided to totally rethink our approach to the Cheetah and Tiger cowlings."

As a result, Lopresti and his sons, Curt, David and Jim, initiated a redesign of the Cheetah/Tiger cowling. The original fiberglass cowlings were made of a polyester resin, but the Loprestis switched to a high-tech vinyl epoxy material that's considerably stronger than the stock fiberglass.

Aerodynamically, the Speed Merchants team tightened the prop shaft baffle to inhibit air spilling out and reshaped the

cowling's cooling air inlet, reducing the size with diffusers to actually increase pressure recovery. This slows airflow and allows it to work longer on the cylinders, improving engine and oil cooling. The Loprestis also split the nosebowl vertically to allow access to the starter and alternator without pulling the spinner and prop.

The result of all this attention to detail is 3.5 knots more speed, lower cylinder head and oil temps and at least a theoretical improvement in reliability, since cooler engines usually run happier and longer. Also, if sex appeal counts for anything, the new cowling is an instant winner.

Most of the Cheetah/Tiger airplanes seem to have a natural attraction for pilots, a certain charisma lacking in other, stodgier, less exciting models. That appeal engenders near-fanatical support for the type

among owners, and the Cameron Park, Calif.-based American Yankee Association (AYA) counts some 2,000 members on its rolls, including 1,500 planes. (Contact AYA at 530-767-4292 or www.aya.org.)

The book is probably closed permanently on the Trainer and Cheetah, but with any luck at all, the new Tiger will keep the type alive. P&P



Speed merchant Roy Lopresti and his wife, Peggy.

FACTORY COMPARISON



