

Pilot Flight Check Grumman American's Cougar

**Despite the delays, the Cougar
is the first of a new breed of light twins
filling a forgotten bin in the market**

by BERL BRECHNER / AOPA 46658

■ ■ Grumman American's first light twin, the Cougar, has experienced a long birthing. Despite vast resources, Grumman was repeatedly dogged by the complexities in technology and bureaucracy that arise in producing a budding flying machine.

In the process of creating the Cougar, too, Grumman American abandoned its plant on the pristine shores of Lake Erie, and consolidated its commercial plane production (except for agplanes) at Savannah, Ga.

Using a varying mixture of mettle and tenacity, however, Grumman has—finally—completed the task. A first Cougar was provisionally certified in August, and production-line airplanes were being pushed into the paint shop in November for December delivery.

Inevitably, this new plane with twin 160-hp engines and seats for four, is compared to the Piper Twin Comanche, now five years out of production. It had been the only twin with 160-hp engines to achieve any degree of popular and financial success. In the course of the Twin Comanche's 10-year history the plane also picked up a reputation for being "touchy" to fly—a reputation still a hot item of dispute at airport coffee shops around the world.

Nonetheless, pilots wondered whether the Cougar could possess the Twin Comanche's merits—particularly its speed and economy—while overcoming its drawbacks.

As it turns out, the comparison between Cougar and Comanche can be a very quick and cursory one. They have similar engines and seating, and speeds

of Cougars compare to speeds of early Twin Comanches. But there the similarities end.

The Cougar has a "big airplane" look about it—more the size of a Beech Baron or Cessna 310. Both cabin and baggage space is extensive. The machine has a low minimum control speed—lower, in fact, than its stall speed. It handles in any configuration in a most docile manner. And the new airplane has been constructed, in part, of aluminum honeycomb material, with portions of its structure bonded rather than riveted.

But despite (or perhaps because of) its size and comfort, the Cougar will likely acquire a common stigma of "light-light" twins, that of it being perceived as underpowered. It has huge fuel tanks (114 gallons usable in two tanks) and not excessive useful load. Obviously the tank capacity and the general size of the Cougar lend themselves to a version of the craft with higher horsepower—say 180- or even 200-hp powerplants.

But for now, with two skinflint Lycoming 160s, operators of the Cougar will have to be content with an airplane that, with full fuel, is a long-range two-placer. Fueled to the bottom tab in the filler neck (for 76 gallons usable), you've now got a very comfortable and kind of quick three-placer. There are several single-engine machines that will offer a lot more carrying capability, similar speeds, and lower purchase and operating costs. With a Cougar, or any other twin-engine aircraft, you pay for peace of mind: when an engine quits,



there's another one to continue you on your way.

If that safety margin is desired, or if you are simply looking toward a new twin to use as a trainer or long-distance flying machine, there is—at present—no cheaper way to do it than with a Cougar. But let's not overstate the case. For, though the Cougar is the least expensive production twin, it isn't cheap; N740GA shown on these pages was comfortably but not elaborately equipped—yet comes with a price tag of \$95,430.

The basic airplane, a GA-7, is priced just a shade below \$70,000. But it is so basic (one set of brakes and one yoke; no gyros, landing lights, sun visors, temperature gauge, etc.) that it would be virtually unusable. The GA-7 Cougar comes with these gaps filled, plus some other accessories, to bring its price to \$75,500. Additional options, plus radios and autopilot push the well-

GRUMMAN AMERICAN GA-7 COUGAR

Basic price (GA-7) \$69,900

Specifications		Performance	
Engine	(2) Lycoming O-320-D1D, 160 hp, 2,700 rpm	Takeoff distance (ground roll)	1,000 ft
Propeller	Hartzell constant-speed two blade, 73 in dia	Takeoff over 50 ft	1,850 ft
Wing span	36 ft 10 in	Rate of climb	1,200 fpm
Length	29 ft 10 in	Single-engine rate of climb	310 fpm
Height	10 ft 4 in	Maximum level speed	168 kt
Wing area	184 sq ft	Normal cruise speed (75% power 8,500 ft)	160 kt
Wing loading	20.65 lb/sq ft	Economy cruise speed (45% power, 8,500 ft)	106 kt
Passengers and crew	4	Range at normal cruise (with 45-min reserve)	815 nm
Empty weight (GA-7)	2,450 lb	Range at economy cruise (with 45-min reserve)	1,105 nm
Useful load	1,350 lb	Service ceiling	18,300 ft
Gross weight	3,800 lb	Single-engine service ceiling	4,900 ft
Power loading	11.88 lb/hp	Stall speed IAS (clean)	71 kt
Fuel capacity (standard)	120 gal (114 usable)	Stall speed—IAS (gear and flaps down)	63 kt
Oil capacity	16 qt	Minimum control speed, single-engine	61 kt
Baggage capacity		Landing distance (ground roll)	900 ft
Forward	75 lb	Landing over 50 ft	1,600 ft
Aft	200 lb		

endowed Cougar's cost into the 90s.

There are bits of kinship between the Cougar and the speedy light singles that come from Grumman American. But they are few. The Cougar has the same flat underbelly found on the singles, and a flat-folding rear seat for extra cargo space. Construction techniques are also shared. But the rest of its design and, particularly, the feel of the Cougar differ markedly from the singles.

A sliding canopy for the twin was abandoned part way through its development, and a traditional right-hand door was installed. The Cougar has a steerable nosewheel, spring-loaded elevator, and heavy control-force requirements. Ground steering was stiff, though the craft seemed quite adept at tight turns. In the air the Cougar lacked the sports car sprightliness of the singles, yet was pleasantly responsive to control about all three axes.

At this juncture let's dispense a few numbers. Along for the flight was Jim Parker, training administrator for Grumman lightplanes. With two on board and 70 gallons of fuel we were about 300 pounds under the Cougar's 3,800-pound maximum gross weight as we cruised at 8,500 feet. A noisy 21 inches of manifold

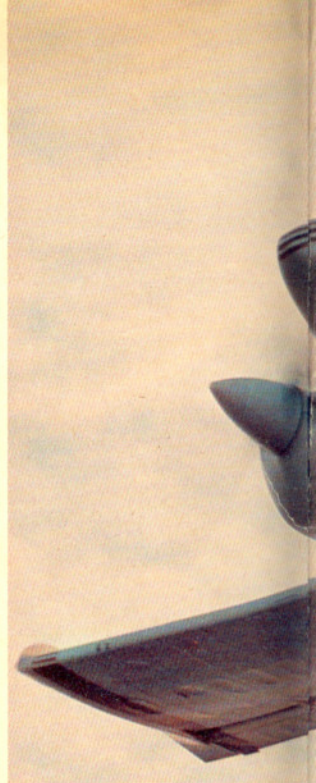
pressure and 2,700 rpm produced 75% power for an indicated speed of 142 knots (outside temperature was 50°F), and true airspeed of 164 knots (188 mph).

For reduced sound levels, and a total fuel consumption drop from 20 gph to 14 gph, 65% power (21 inches manifold pressure and 2,500 rpm) made a pleasant alternative. The needle showed 133 knots, converted to 154 knots true. A two-way DME check, which gave an average speed of 152 knots, corroborated that dial speed. In either of these configurations, speeds measured about 4 knots faster than preliminary performance specifications offered by Grumman American, a variance likely attributable to our light flying weight.

Simple computations using 14-gph cruise figures show that with 114 usable gallons, the Cougar will aviate for an astonishing eight hours, and your tanks would run dry at 1,220 nautical miles or so from the takeoff point.

In an engine-out situation, you find performance of the Cougar a bit sluggish but its manners both predictable and docile. At 3,500 feet in 60°F air, the plane could manage about 200 to 250 fpm rate of climb with the left engine shut down and its prop feathered. (By a fortuitous bit of planning, both the best rate and best angle of climb speeds are 85 knots indicated). Lower-

Main wheels forego the luxury of doors, while the Cougar's flat belly shows its relationship to Grumman's singles.



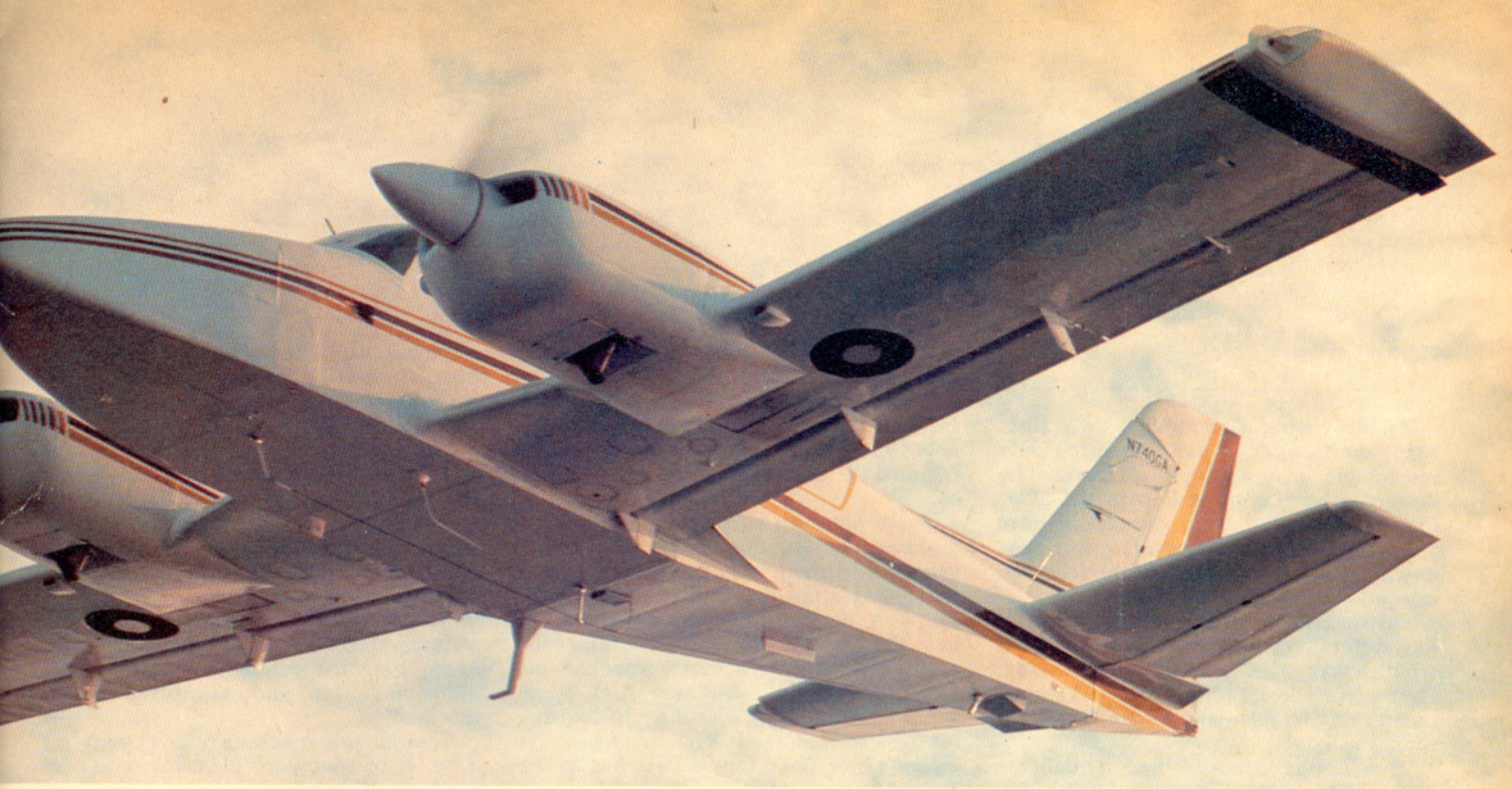
ing of gear caused about a 200-fpm sink, as did dropping flaps at 85 knots. However, reducing speed to 75 knots offered a slight bit of climb, flaps down full.

The airplane has a published minimum control speed of 61 knots. With right engine at full power, I slow-flew, stalled, banked up to 30 degrees, and cross controlled—all at indicated airspeeds down to 60 knots. At the lower speeds, the craft—already buffeting in a stall—would begin a most gentle turn



The Cougar's rear seat cushions are removable so seat backs can fold flat to extend the baggage compartment. Fuel selectors between the front seats are clearly marked, and have associated fuel pump switches close at hand.





toward the dead engine. By reducing power and nosing down, the stall buffet ended and the turn was arrested with little more than 150 feet loss in altitude. Grumman calls for a sea level, single-engine rate of climb of 310 fpm, and a single-engine service ceiling of 4,900 feet. Those numbers may be nothing to write home about, but compare them to the performance of an engine-out single.

With both engines going again, gear and flaps down, the craft was flown—although on the verge of a stall—as slow

as 52 knots, indicating a capability for slow flight in a pattern full of even the slowest of trainers. A stall, power off, came at about 60 knots, while with the gear and flaps up the stall arrived at 74. In either case, and in accelerated stalls, the airplane is recoverable by the normal means, with no wing-tucking tendencies.

The number four Cougar off the line, N740GA showed some rough-hewn cockpit parts, as well as slightly rippled fuselage sides. But its overall appearance was good: it comes with a healthy

coating of polyurethane paint, and has a well-finished interior.

There were a couple of noises that apparently should not have been. One was a distracting rattle that presented itself when the plane was in a yaw or slip condition; another was a wind-induced rumble that seemed to come from the nose area. Also, air vents for the rear seats produced a surprisingly loud whoosh when open. Factory representatives were attempting to remedy these problems.

continued



Primer, magneto, master and alternator switches, all similar, are in a tight array at lower left panel. The rest of the interior is both attractive and utilitarian.

Besides being Grumman's only light twin, the Cougar is the company's only retractable piston-driven aircraft. The designers have done well with the gear, for its extension and retraction have almost no effect on aircraft pitch. The down cycle was clocked at four seconds; retraction took 10.5 seconds.

Surprising for this size airplane, it has different gear speeds depending on which way the wheels are moving. Gear can be lowered at up to 145 knots, but it can't be retracted at speeds higher than 115 knots.

The Cougar faces, too, a delicate weight and balance situation. With full fuel and two 170-pound people aboard, N740GA would be 50 pounds under maximum gross weight and have its center-of-gravity moment just within the forward limit of the CG envelope. As fuel burns, the CG stays just on the forward limit, so pilots using the optional (\$360) nose baggage compartment should keep this forward CG probability in mind. Also, installation of weather radar

(not available as factory option) may well present difficulties.

Another weather-protection item, air-frame deice equipment, is not yet available. Grumman reports that approvals for anti-ice gear may come in a year or so.

Some pleasant surprises are found as one begins using this new airplane. Fuel selection is made with two handles, each with simple on, off, and crossfeed positions. A button must be depressed to get the handle to "off". Behind the handles, which are easily reached between the front seats, are fuel pump switches that light up when turned on.

Less well-defined are a cluster of chrome look-alike toggle switches at the lower left of the panel that operate mags, alternators, prime and the master. Color-coding or a more distinct arrangement of these switches would be desirable. The craft's cowl flaps are hooked to two twist-and-pull handles that proved to be fingernail-breakers because of their placement and tightness. Carburetor heat knobs are just above the cowl flap handles.

Other instruments and controls were

arranged well, however, and plenty of fresh air ventilation was available to the front seats from two panel-mounted vents just under the control yokes.

On landings, the elevator seemed reluctant in giving flare, particularly in the forward CG configuration of these flights. Carrying 80 knots on final seemed best at the Liberty Co., Ga., 3,700-foot strip, where a number of landings were made during a 75° F morning. You do not want to drive this airplane down to the pavement. Seventy knots over the fence is perfectly adequate for safe and gratifying touch-downs.

Though the machine was skimpy on flare, it offered very pleasant power-off landings. Its sink rate never seemed excessive, and by keeping reasonable glide speed a smooth roundout was always achieved. Several single-engine approaches and landings were also tried. Using the "don't do anything until the runway is made" method, you'll likely overshoot your landing spot in this airplane. Given the Cougar's easy single-engine handling, good glide, and low Vmc, single-engine approaches should be handled pretty much as normal, with judicious use of gear and flaps long before the "final" final.

Landings to a full stop used about 1,300 feet, but full flaps seemed to significantly reduce braking effectiveness. A short-field takeoff was surprisingly short. Into about a 10-knot headwind at 97-foot msl Liberty Co., the Cougar jumped into the air at about 60 knots in less than 700 feet from the runway end. An initial 1,200-fpm rate of climb settled back to 900 fpm at 1,500 feet using the recommended 95-knot climb speed and 25 inches/2,500 rpm power setting.

Grumman American is aiming toward sales of 170 Cougars during 1978, according to Grumman's Roy Garrison, senior vice president for light aircraft marketing. He says their research shows a strong market for a plane "with twin-engine reliability coupled with operating economics similar to those of a high-performance, single-engine model."

The Cougar has been a long-awaited airplane, and is—as are most lower-priced twins—a machine of compromise. It is roomy and good-looking, but will surely get bigger engines and a boosted load in the future. There's a question whether the Cougar will hold its own in the 160-hp twin category and remain an "inexpensive" airplane. For the clamor for more performance has, in the past, created a new class airplane from others that sprang from roots like the Cougar's. □



Twin 160-hp engines make for economy, although they produce cruise speeds up to 160 knots.