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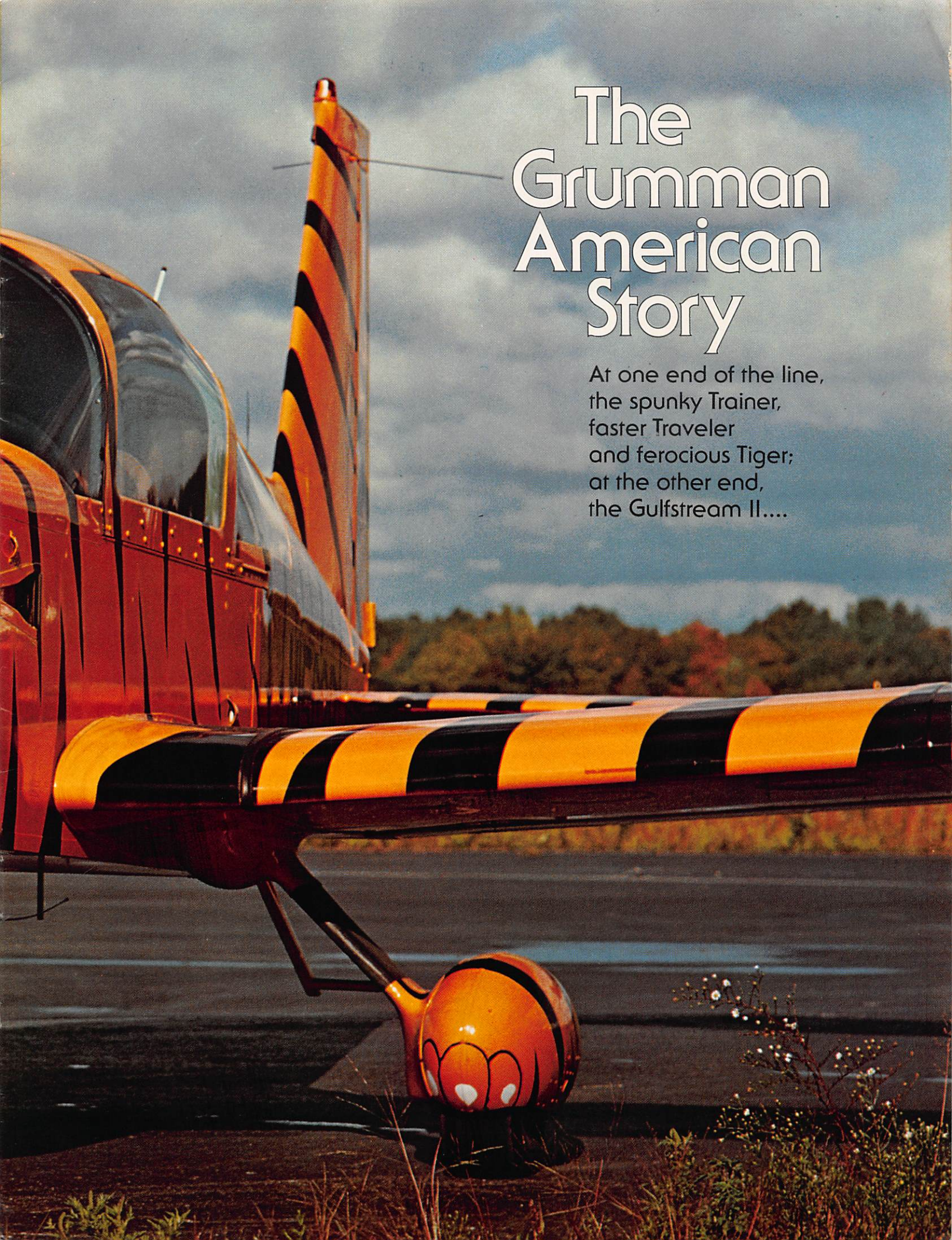
Special:

Focus on Grumman American

The Company: Giant in the Making?

The Planes: From new Tiger to G-II



The Grumman American Story

At one end of the line,
the spunky Trainer,
faster Traveler
and ferocious Tiger;
at the other end,
the Gulfstream II....

Fuel-efficient and very fast: the new Tiger does all that Grumman American claim.

Grumman American Story

The Aircraft

If this is to be the age of the simple airplane, Grumman American has a leg up on the competition, from the sporty Trainer to the four-place Traveler, to the 180-hp Tiger that really GRRRRS.

Richard L. Collins
COLOR PHOTOGRAPHY BY RUSSELL MUNSON

IF THE NEXT era is to be one of efficient simplicity, Grumman American is right on target. The four GA lightplanes—the two-place Trainer and Tr2, the four-place Traveler and the new Tiger—are as basic as they come, with fixed-pitch propellers, four-cylinder engines (with a recommended 2,000 hours between overhaul) and fixed landing gears that don't have a single oleo strut to bother with. They are compact as well as simple machines: Park a Grumman American on the line with a Cessna, and it looks small. If the same thing happens to airplanes that is happening to cars (and there is every reason to believe it might), compact might become synonymous with desirable.

Inside, a Grumman American is less compact. There is good bucket seating all around. There are no doors. Although the sliding canopy is oft snorted at by competitive salesmen ("Why, nobody is willing to clamor over a wing, get in it like it is a fighter plane and slide that thing over his head . . ."), the canopy works well. It has advantages and disadvantages just like anything else. There are no poorly adjusted doors to shriek, but the canopy does invite leakage. Grumman American has put great effort into stopping the leaks, and perhaps they have been successful on the 1975 models. Other airplanes leak, too, but in different places.

Another Grumman American design feature is particularly in tune with the times. The pilot sits tall, so the instrument panel does not obstruct forward visibility, and the bubble on the two-place airplane and the big side windows in the four-seaters offer a great view to the sides in level flight as well as in turns.

Fuel economy is of prime importance and is a result of some of the new design features. The Traveler's speed was increased six knots in the '75 model through aerodynamic refinement of the cowling and landing gear. The Tr2 continues to do as well as it did in FLYING's test run, which compared its fuel use on a fly-off against a Ford Pinto (the Tr2 won, see "The Great Fuel Race," March 1974). The newest Grumman American, the Tiger, is going to make its mark in the fuel-efficiency business as its pilots divide gallons per hour into higher cruise-speed numbers.

The 180-hp Tiger is new for the 1975-model year. It's a growth version of the 150-hp Traveler, with only slight external differences. The Tiger doesn't have the ventral fin used on Travelers; the horizontal stabilizer is larger; there's no induction air intake at the front of the cowling (the Tiger's horizontally mounted carburetor gets air from the engine compartment) and a tiger decal leads a parade of stripes down the side of the fuselage. Inside, you'd have to get to real details, such as instrument markings, to find a difference. In fact, Grumman American uses the same panel photo in Tiger and Traveler literature.

While the airplanes might be nearly identical twins, they have different personalities. For $4,000 more, a Tiger buyer gets an airplane with performance—a solid cut above basic. In fact, the 139-knot cruising speed, healthy rate of climb and good useful load make it a contender in the marketplace now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Grumman American Story

Grumman American buyers will have to decide between the 180-hp Tiger (above) and the 150-hp Traveler (below). The question becomes: Are 30 horses worth four grand?

dominated by airplanes (some with retractable gear) that ring the gong at as much as ten grand over the Tiger's fully IFR-equipped price of approximately $31,500. Grumman American might well market the airplane against more expensive planes as vigorously as against the head-to-head competition, (the 180-hp, fixed-gear Cessna Cardinal, the Beech Sundowner and Piper Archer) because the market for more exotic airplanes is bigger. There's just not been a lot of traffic in 180-hp single-engine, fixed-gear airplanes.

Can a Tiger really cruise at 139 knots, using the same engine that propels an Archer at 123 knots, a Cardinal at 130 and a Sundowner at 124? It's only natural to wonder if there's some sleight of hand involved, so I flew the Tiger on a two-way run, averaging the speed in each direction to get a true picture. The flight was made at 3,000 feet, in turbulent air because of cloud bases at 4,000 and an experimental ticket on the airplane that would not allow IFR. Both speed and fuel consumption were measured to test velocity as well as the amount of power used. The results were convincing.

The speeds for each direction averaged 130 knots. A normally aspirated airplane that will cruise at 130 knots at 3,000 feet at 75-percent power would be expected to cruise at about 137 or 138 knots at 9,000 feet, the maximum altitude at which 75-percent power can be drawn from the Tiger's engine, thus its optimum cruise altitude at that setting. The fuel use indicated a flow at cruise of 10.6 gallons per hour (the 75-percent power figure), but the flight was made in turbulence, which probably cost a mile per hour or two. I buy the advertised 139-knot top cruise for the Tiger.

The 180-hp engine in the Tiger does good work in a climb. At the Tiger's 92-knot best-rate-of-climb speed, upward progress was in the area of 700 to 800 fpm, with the airplane loaded to within 100 pounds of gross weight. The air must not have been very buoyant, because later in the day, in clear weather, the Tiger was delivering 600 fpm at 6,500 feet, and 500 fpm at 8,500 feet at standard temperature.

The Tiger has 52-gallon tanks (51 gallons usable), so 4.8 hours would be the maximum endurance at 75-percent power. Take a little off that for taxi, takeoff, climb and an hour off for reserve, and the Tiger develops into about a three-hour-and-45-minute airplane. That's competitive, but some buyers will, no doubt, clamor for larger tanks. Those who want more endurance will just have to slow down, fly longer and get better gas mileage in the process. The Tiger is a clean airplane, and its economy cruise should be very rewarding. It should deliver a true airspeed of about 130 knots on eight and a half gallons per hour.

The Tiger rides quite nicely in turbulence; very effective controls make it a fingertip airplane in rough air or smooth. Stall characteristics are excellent, and balked landings are no problem. If there is a characteristic one must learn, it is in the approach for landing. Even though the flaps go out to 45 degrees (as opposed to 30 degrees for the Traveler), they are not very effective in dirtying the clean airframe, so there is a shallow angle for every approach—600 to 700 fpm is about the best you'll do. Some slips were tried, and they did increase the angle of descent, but not too gracefully. The rudder, which seems quite effective and lively when you're flying, loses its bite in a slip and the maneuver turns into more of a slop. Spoilers on the wing, such as are used on gliders, would enhance steep approaches on such an aerodynamically clean airplane. In the meantime, forewarned is forearmed. Don't anticipate a steep approach in a Tiger.

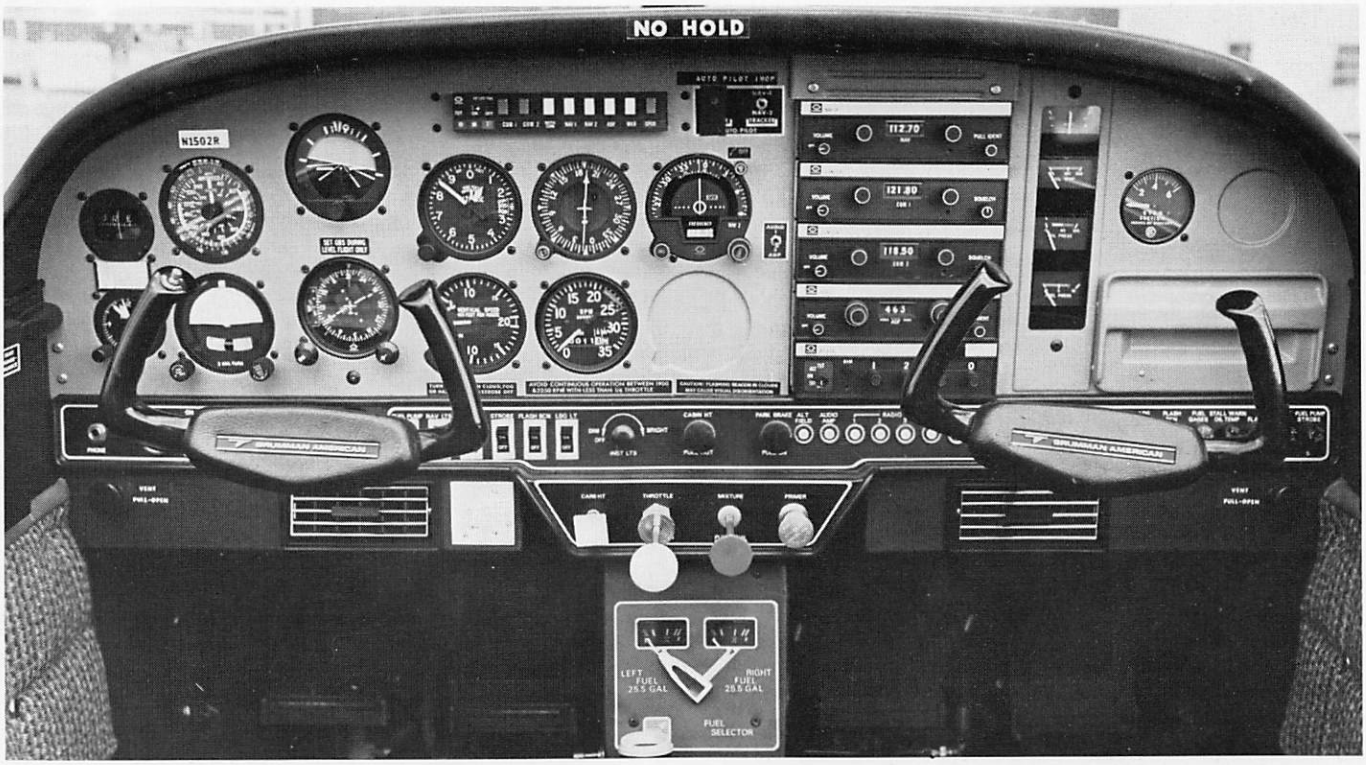
I found the Tiger a comfortable airplane, though it would be better to fly one all day long to make a positive decision. The seat is firm, which a lot of people like, and it is a good distance off the floor, so there's no sports-car stretch. The noise level is about average for this class of airplane at 75-percent power, and the vibration level is low. Some people complain that the spar goes through the rear cabin in the precise spot where a six-footer would want to put his feet, but I didn't find it that bothersome in a brief rear-seat test. An IFR Tiger should handle full fuel plus 690 pounds in the cabin, so that if you have four people and baggage, the people or suitcases must be a bit below average size unless fuel is restricted. The rear seat can be folded over, as in a hatchback car, to provide a large, flat area for cargo or baggage. A nice feature.

The pilot's work area is good, though the instrument panel does have a minor problem. It is a wide panel, and Grumman American chose the standard "T" for the flight instruments; they put the tachometer and ADF indicator between the flight and primary navigation instruments. For IFR, it's best to get those primary nav gauges as close to the flight instruments as possible. An individual buyer could rearrange them, of course. The panel will hold everything, though an extension atop the panel would be required to handle certain radio stacks. Grumman American does not yet offer DME on any of its airplanes, either, so a place would have to be found for it as well.

The Tiger represents a unique combination of performance, efficiency and simplicity that could make it fit the needs of the person looking at everything from a basic four-place through a small retractable. The 139-knot cruise and three-hour-and-45-minute endurance (with good reserve) make it a 550-nm airplane. One could go halfway across the country with one stop on a total of 79 gallons of fuel. The single-engine, fixed-prop and fixed-gear simplicity should help maintain the integrity of the user's dollar, and the 180-hp engine is one of Lycoming's best. Those factors should help keep the Tiger away from the repair shops, where visitation now comes at the rate of $12 or more per hour.

If the Tiger's $31,500 suggested retail price for a complete IFR airplane puts a buyer off, Grumman American has a viable alternative in the 150-hp Traveler: four grand less.

When walking around the Traveler, you



The Tiger may be a "simple" airplane, but the panel can take on complex work.

might wonder why this airplane has a ventral fin (at bottom rear), when its higher-horsepower brother does not need one. The answer has to do with spin recovery. Neither airplane is approved for intentional spinning, but single-engine airplanes must be spun for certification, whether approved or not, and the Traveler needed that little bit of extra feather back there to meet spin-recovery standards, whereas the Tiger's slightly heavier engine and larger horizontal tail changed its spin recovery characteristics enough to make the ventral fin unnecessary.

The cowling is a major change in the Traveler for 1975, and it is far better streamlined than the 1974 model. Besides being aerodynamically functional, the new cowling is also a whole bunch better looking than the old one.

Inside, the airplanes are virtually identical. The elevator is slightly more sensitive on lift-off, and there's a slightly less spry rate of climb.

Before starting the two-way timed run, I noted that the Traveler has a bit more vibration than the Tiger. Later investigation revealed that a different, softer engine mount is used with the 180-hp engine; it's too bad that Grumman American didn't favor the Traveler with the better engine mount as well.

The indicated airspeed of the Traveler was nipped away at 120 knots, surprisingly close to that of the Tiger. At 3,000 feet, the engine was turning 2,500 rpm, which the Grumman American man in the right seat said was about 75-percent power; the average of the two runs was about 124 knots, just six shy of the Tiger. The airspeed was about right, and the speed was indicative of about a 130-knot cruise at 8,500 feet, the Traveler's top altitude for 75-percent power, or two or three knots over what Grumman American claims for the airplane. This extra speed could be explained by the fact that the airplane was 275 pounds below gross weight for the speed run.

In the landing pattern, the Traveler has flat approach characteristics, but even though it has less flap travel than the Tiger, the Traveler comes down about as well. The flaps just aren't very effective at any setting. On landing, the difference in horizontal tails and elevators is quite noticeable, but in what seems an incorrect way. Even though the Traveler's tail is much smaller, the elevator is more effective because it has a lot travel and the antiservo tab gearing is different. The added effectiveness can induce a touch of overcontrolling in the flare until the technique is learned, and this characteristic has led to porpoising incidents and busted nosewheels in Travelers. At the other end, it can also combine with the ventral fin to make a scraping noise on the runway if extra effort is put into making a good, tail-low landing.

The Traveler's mission profiles are cut a little short by its maximum fuel supply of 37 gallons. Take an hour off for reserve and subtract a couple of gallons for taxi, takeoff and climb, and it becomes a three-hour, 385-nm airplane. A Traveler with the larger Tiger tanks for missions with light cabin loads could, however, be a very attractive airplane for the serious IFR pilot seeking a simple solution to a usually expensive problem; Grumman American will probably offer the bigger tanks on the Traveler later on. With the present tanks, an IFR-equipped Traveler will carry about 611 pounds in the cabin; with the big tanks, that would be cut to 526 pounds.

A cruise of very near 130 knots on one of those little 150 Lycomings isn't to be dismissed lightly, and there are some people at Grumman American who feel that the Traveler's new vigor makes it a real comer. After the initial flurry of interest in the Tiger settles back to normal enthusiasm, they feel that the Traveler will quickly regain its following. It will be interesting to watch, as buyers mull over the better cruise, rate of climb and range numbers of the Tiger and also contemplate the economy of the Traveler. Of course, you can buy a Tiger, cruise it at Traveler speeds and have the same economy while reserving those extra 30 horses for climb and special occasions. But is that worth four grand?

On now to Grumman American's pair of two-place airplanes, which are really one. At the company's dealer meeting, they even told those who didn't already know that it is easy to make a Trainer into a Tr2. Just change the prop, rearrange the stripes on the side, and, presto, instant Tr2. Perhaps they separate it into two airplanes to make the product look larger, and there is strong logic to support this. A flight school operator thinks in terms of a training airplane when he goes to market, and the person buying a two-place for recreational flying, or business and personal use, does not think of buying a training airplane. To each his own, and when a propeller and a few swipes of paint can change the character of an airplane, it certainly should be done. The prop, incidentally, maximizes climb performance on the Trainer and cruise on the Tr2. No reason the owner of either couldn't have two props and change them as appro-

priate to the mission, thus having two airplanes for one monthly payment.

There is no doubt that the two-place airplanes were the forerunners of the four-place airplanes in the Grumman American line. There is a commonality of looks as well as of parts that keeps the kinship up and the costs down, but the similarity does end there. The Trainer and Tr2 are jauntier and sportier and come on as rather small and very personal machines. If one dimension stands out as drastically different, it is the wingspan. The four-place airplanes have seven feet of additional span; the wing section is the same—it is just lengthened on the larger airplanes.

Looks carry through to handling qualities. The Trainer is very quick; when you move something, there is almost instant response. The airplane minces no words, from the start of a flight to the finish. Some feel that it might be a bit much for a training airplane, but I don't think so. A person who learns in a Grumman American Trainer might require a few extra hours, but the end result would be a pilot well equipped to check out in larger and faster aircraft with little ado.

The Trainer's first message comes on the takeoff roll. Like all Grumman American lightplanes, the nosewheel is not steerable, so all you feel with your feet is pure rudder and air. When the time comes to fly, it is done with rather gentle back pressure and a keen eye for the proper climb attitude. The elevator is strong, as on the Traveler.

Once off, the noise level is a bit high during full-power climb, but what you see more than makes up for what you don't hear. The visibility is superb, which is a good training aid as well as a safety feature. Nothing slips by unnoticed. If the air happens to be turbulent, that is okay, too. The Trainer has a relatively high wing loading for a light airplane (15.6 pounds per square foot compared with 10 for a Cessna 150), and it rides through bumps with little fuss and bother. Stalls are okay, with quick recoveries and some roll control through the stall.

If you have been flying the Traveler and Tiger, there will be a final approach surprise in the Trainer. It has a high sink rate, resulting in a much steeper approach path than its big brothers. In fact, it might take several circuits to manage a power-off approach in a Trainer. Speed control is demanding, because a few knots too slow on approach will increase the sink rate materially, which it does not seem to do in the four-place airplanes. All this is a product more of low aspect ratio and wing loading than the flaps, which are not very effective.

A comfortable final approach speed is about 70 knots, and a Trainer does not float very much after an approach at that speed. It decelerates to the 52-knot stalling speed rather quickly after flare, and, in fact, it is pretty much a matter of flaring, assuming the landing attitude and landing. These characteristics would keep a flight instructor on his toes as a student learns to approach at the proper speed, judge height and flare properly. Again, though, when a control is moved, the airplane speaks clearly, and the powerful elevators make the landing an easy maneuver once peace is made with their effectiveness.

The atmosphere in the Trainer is good. The cabin is wide, so there is no crowding, and the instrument panel can swallow a whole collection of good IFR things to make the airplane a complete trainer. Cruising speed is 108 knots at 3,000 feet and fuel endurance is three hours and 30 minutes with no reserve—adequate for most training applications.

The Trainer and Tr2 mate with the Traveler and Tiger to form a unique base for the complete line of airplanes Grumman American is planning to build to fill the gap between the Tiger and the Gulfstream II. If the young company gets as close to the target with subsequent airplanes as they have with these, and if they develop a large marketing organization, they are going to need a big factory and a lot of workers to satisfy the demand.

	TRAINER	Tr2	TRAVELER	TIGER
Basic Price	$11,337	$15,312	$20,137	$24,137
Basic IFR price	$21,237	$21,467	$27,479	$31,479
Engine	Lyc O-235-C2C, 108 hp	Lyc O-235-C2C, 108 hp	Lyc O-320-E2G, 150 hp	Lyc O-360-A4K, 180 hp
TBO	2,000 hrs	2,000 hrs	2,000 hrs	2,000 hrs
Propeller	Fixed pitch	Fixed pitch	Fixed pitch	Fixed pitch
	71 in. dia.	71 in. dia.	73 in. dia.	73 in. dia.
	53 in. pitch	57 in. pitch	59 in. pitch	59 in. pitch
Length	19.24 ft.	19.24 ft.	22 ft.	22 ft.
Height	7.6 ft.	7.6 ft.	8 ft.	8 ft.
Wingspan	24.5 ft.	24.5 ft.	31.5 ft.	31.5 ft.
Wing area	100.92 sq. ft.	100.92 sq. ft.	140 sq. ft.	140 sq. ft.
Wing loading	15.55 lbs./sq. ft.	15.55 lbs./sq. ft.	15.7 lbs./sq. ft.	17.1 lbs./sq. ft.
Seats	2	2	4	4
Empty weight, IFR equipped	1,061 lbs.	1,074 lbs.	1,350 lbs.	1,385 lbs.
Useful load	499 lbs.	486 lbs.	850 lbs.	1,015 lbs.
Payload, full fuel and oil, IFR equipped	355 lbs.	342 lbs.	611 lbs.	692 lbs.
Gross weight	1,560 lbs.	1,560 lbs.	2,200 lbs.	2,400 lbs.
Power loading	14.4 lbs./hp	14.4 lbs./hp	14.7 lbs./hp	13.3 lbs./hp
Fuel capacity	22 gals./132 lbs.	22 gals./132 lbs.	37 gals./222 lbs.	51 gals./306 lbs.
PERFORMANCE				
Minimum runway requirement	1,590 ft.	1,590 ft.	1,600 ft.	1,550 ft.
Rate of climb	705 fpm	660 fpm	660 fpm	850 fpm
Service ceiling	12,750 ft.	11,550 ft.	12,650 ft.	14,600 ft.
Maximum speed	138 mph/120 kts	144 mph/125 kts	157 mph/136 kts	170 mph/148 kts
Cruise, 75% power @ optimum altitude	124 mph/108 kts	133 mph/115 kts	147 mph/128 kts	160 mph/139 kts
Miles per gallon @ 75% power cruise	19.7 sm/17.1 nm	21 sm/18.3 nm	17.3 sm/15 nm	15.1 sm/13.1 nm
Range @ max cruise (45-minute reserve)	343 sm/298 nm	363 sm/315 nm	520 sm/450 nm	650 sm/565 nm
Duration @ max cruise (no reserve)	3.52 hrs	3.48 hrs	4.3 hrs	4.8 hrs
Stall speed (clean)	62 mph/54 kts	62 mph/54 kts	62 mph/54 kts	65 mph/56.5 kts
Stall speed (flaps down)	60 mph/52 kts	60 mph/52 kts	58 mph/50 kts	61 mph/53 kts

Grumman American Story

The Grumman Connection

An American Yankee in Aerospaceland

by John W. Olcott

THE GRUMMAN AMERICAN Aviation Corporation is many things to many people within the general-aviation community. To many corporations, it is an aerospace manufacturer that has diverted some of its vast engineering talent from its usual course of satisfying military and space needs to building an executive jet that flies higher and faster than most airliners. To the ag operator, Grumman American is the supplier of a plane designed specifically for aerial applicator work—truly an ag pilot's dream, with an excellent safety record to prove it. To the student learning to fly, it is the builder of the two-place Trainer. To the man looking to buy an economical light plane, Grumman American is the company behind the four-place Traveler and 139-knot Tiger. To the handful of men who constitute the Grumman Corporation, Grumman American is a holding second only to Grumman Aerospace in the corporation's total dollar volume. In fact, Grumman American Aviation is all these things and more. This merger of an old aerospace firm and a young lightplane manufacturer seems well on its way to becoming a significant force in the development of general-aviation aircraft.

The American Aviation Corporation part of the name dates back to the troublesome days in the early 1960s when Jim Bede was having difficulty launching his BD-1 program. In 1965, several financial backers of Bede Aviation Corporation convinced Bede, who was the founder of the firm and designer of the AA-1 Yankee predecessor to step aside in favor of Fred A. Lennon, a Cleveland industrialist and BAC stockholder, who became the firm's new president. Although Bede still owned a major portion of the shares in the corporation that bore his name, he withdrew from nearly all its activities as new management strategies developed. In 1966, Bede Aircraft became American Aviation, with Russell W. Meyer, Jr., a young ex-Marine jet pilot and lawyer for the group of original backers, as its head. Jim Bede initially owned a sizable, though not controlling, interest in the firm. However, he did not take a role in its future development and eventually sold most of his stock in American Aviation. Under Meyer's leadership, American Aviation maintained the basic aerodynamic configuration of Bede's BD-1, but the metal-bonding process was changed to facilitate certification. The public was introduced to the AA-1 Yankee at the 1968 Reading Air Show, and after two years, 350 of the spritely little two-seaters were making their mark in the hands of FBOs and private pilots across the country.

In 1971, a modified airfoil replaced the original BD-1 62_2415 wing section used on the Yankee, and the more docile AA-1B Trainer was born. About the same time, the Trainer wing was extended seven feet, 40 percent more horsepower was added, and the fuselage was lengthened to create the four-place AA-5 Traveler. The public liked what the American Aviation Corporation had to offer, and so did Grumman. In early 1973, the large Long Island-based producer of the Gulfstream II and the supersonic F-14 fighter purchased 80 percent of the small Cleveland firm's stock, and Grumman American Aviation Corporation was formed with Russ Meyer again being selected for the president's chair. As the ink dried on the articles of incorporation, Grumman American became, at least in body if not in soul, the keeper of general aviation's most diffuse product line.

The immediate impact of the Grumman connection was not totally apparent. The factory that had been constructed to manufacture BD-1s within a few miles of Lake Erie's shores, on the outskirts of greater Cleveland, continued to produce about 500 aircraft a year. The Trainer and its spruced-up brother, the Tr2, continued to sell quite well in direct competition with Cessna 150s, and the Traveler made a good showing in the Cessna 172 and the PA-28 arena. Russ Meyer and his company continued to compete in the small fixed-gear market area, but with the dollar volume provided by G II and Ag Cat sales, Grumman American became the fourth largest general-aviation manufacturer behind Cessna, Beech and Piper.

Perhaps it was Grumman American's rapid rise to the status of competitor, particularly in the training market, or possibly it was Russ Meyer's stature and exposure as the 1973 president of the General Aviation Manufacturers Association that attracted Dwane Wallace's eye. Late last summer, in a change of address that caught almost everyone by surprise, Meyer moved to Cessna as executive vice president in charge of all marketing and financial operations.

Grumman American was not without a Meyer as president for long. Corwin H. (Corky) Meyer, senior vice president of Grumman Aerospace Corporation, board member of Grumman American and longtime Grumman employee, became the new top man. The surnames are spelled the same, but the backgrounds of the two men are noticeably different. When he took over the presidency of Grumman American, Corky Meyer had been employed in aviation for nearly as many years as Russ Meyer had been alive when he became head of American Aviation in 1966. Corky Meyer spent a significant portion of his very successful career with Grumman in flight testing military and civilian aircraft that became famous for durability and good flying qualities. From his position as chief test pilot, he moved into the top executive ranks, where he was one of two senior vice presidents in a billion-dollar firm building aircraft and space systems that stretched the frontiers of technology.

Corwin W. (Corky) Meyer may appear here to be the prototype businessman and indeed, as senior vice president of Grumman Aerospace, board member and now president of Grumman American, he is. But he reached executivedom through the test-pilot ranks and has turned some very exotic aircraft upside down and inside out. A test-pilot background doesn't keep him from seeing future breakthroughs for Grumman American in the sophisticated indoor test facilities at Grumman Aerospace.

Possibly, it is just that sufficient time has elapsed since the Grumman takeover, or possibly it is due in part to Corky Meyer's intimate knowledge of the Grumman inner workings, but whatever may be the reason, it appears that the Grumman connection is beginning to impact significantly Grumman American. The most obvious result is the physical

relocation and consolidation of all non-agricultural, general-aviation management, manufacturing and marketing functions to the site of Grumman's Gulfstream II production plant in Savannah, Georgia. The Savannah move severs significant ties with the old American Aviation operation and most of what remained of the early Bede Aviation days. Grumman is offering incentives and making a reasonable effort to relocate all those Clevelandites who are willing to trade the shores of Lake Erie for the seaport of Savannah, but leaving one's home is never easy.

The more significant influence of Grumman's presence will be in the area of aircraft design. The Bethpage Long Island facilities of the Grumman Aerospace Corporation include wind tunnels, computers and simulators, plus engineers who know how to make the most of these advanced tools of modern-aircraft design. With the exception of Rockwell International, none of the other light aircraft manufacturers have anything within their respective corporate structures that comes close to matching the hardware, military or research-oriented background that is resident at Grumman Aerospace and is now available to Grumman American. The technical capability of the Grumman organization is apparent for the first time in the new features of the 1975 Traveler and in the creation of the Tiger. The low-drag cowling designs of both these planes are the result of wind-tunnel evaluations and tests run at Bethpage. Other aerodynamic improvements, such as the cleaner landing gear on both planes and the empennage of the Tiger, are design features worked out by using some of the extensive facilities now available to the manufacturers of Grumman American light aircraft. A new four-place, light-twin prototype, powered by two 160-hp mills, that flew on schedule in mid-December 1974 also reflects Grumman Aerospace engineering and know-how.

Corky Meyer states categorically that the least expensive, most productive place to test aircraft is in the wind tunnel. Flight testing is the most costly, according to a man who for years was putting Grumman's latest creations through their paces. This emphasis on tunnel testing for small lightplanes is in direct contrast to tradition in the general-aviation industry, where the approach has been that of finalizing design details by means of flight testing and then making modifications where the results indicated they were necessary. The cut-and-try approach using full-scale prototypes probably is fostered by the lack of good in-house tunnel facilities. It works quite well except that systematic changes that allow the designer to select the optimum configuration for performance and flying qualities are not always possible with flight testing, due to the time required, the difficulty in obtaining parametric design data from flight tests and the cost of full-scale test flying.

Meyer plans to use Grumman capabilities in order to provide a line of light aircraft with exceptional flying qualities, particularly in the areas of slow-speed flight: approach, stall and spin situations. The firm will offer their light twin as a viable alternative to sophisticated singles such as the Bonanza and the Centurion. The Grumman American "light, light" twin, as it is sometimes called, will be designed to be purchased and operated at a cost comparable to the advanced singles. Its flying qualities, particularly on one engine, are designed to be an improvement over existing twins with conventional engine locations. Grumman American plans to stress the suitability of their twin as a multiengine trainer. Future plans call for a retractable single, since Grumman American feels such a plane has a place in the market and is needed to support their dealers, who must offer a sophisticated single as a part of a commercial-pilot training program. A spinnable trainer is also in the plans, so it is not surprising that Grumman American is encouraging NASA's effort to research factors that influence the spin characteristics of light aircraft. Meyer feels that it would be unwise and wasteful not to make the most of the significant capabilities resident at NASA. He also plans to capitalize on the fact that a well-designed lightplane is efficient, in terms of both time and energy, especially if it is capable of IFR as well as VFR operation. Meyer wants his airplanes to be known for utility, which means good IFR-flying qualities. Grumman American intends to encourage instrument training. Meyer states strongly that Grumman American designs will not be "me-too products."

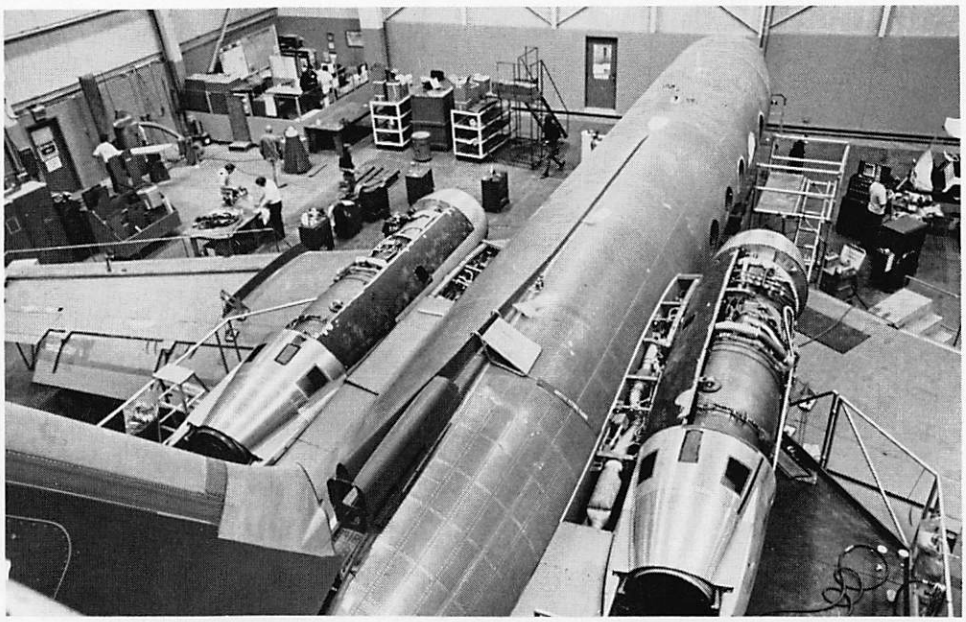
Meyer hopes to use the combination of Grumman's technical might and American Aviation's youthful spirit to quadruple their light-aircraft business in the next five years. The Trainer, Traveler, Tiger line nets about $6.5 million per year in sales now.

While the technical capability of the Grumman organization certainly is a valuable ingredient in Meyer's five-year projections, the equation for success cannot be solved solely by computers. Traditionally, marketing prowess has been very critical—if not the most important weapon—in a lightplane manufacturer's arsenal. Moving planes requires an effective dealer organization that can display, demonstrate, use and service the product. Lesser manufacturers of well-performing planes have gone bankrupt as potential customers found it easier and more beneficial to deal with local FBOs who handled one of the Big Three's products.

Roy Garrison, vice president of marketing, is charged with the responsibility of Grumman American's sales effort. Garrison is a World War II fighter pilot who has spent his career in marketing, most of it at Cessna, where he worked with the dealer-distributor organization. When he joined American Aviation in 1970, the firm's products were represented by only 17 domestic dealers. Now there are 133, and they all work directly with the factory without impedance or competition from a distributor organization. Factory support is provided by six regional managers who report to Tom Reynolds, domestic sales manager. The typical Grumman American dealer is young and enthusiastic, just as many of Garrison's marketing staff are, but the dealers are eager to learn and have asked for as much sales training and factory support as Grumman American can offer. With only six regional people, however, the task of dealer development is formidable.

Garrison does not plan to buck the Big Three head on; he feels that the company must grow as Grumman American—a unique entity. He likes to attract dealers who presently represent one of the other manufacturers and who are willing also to handle Grumman American. Those FBOs have marketing experience and an established clientele. Garrison feels, however, that the product line must be expanded to attract a better, more established dealer.

The future looks bright for Grumman American. Meyer frankly admits that he has some worries about the economy, but he feels that the diverse product line of Grumman American is a hedge that makes his firm somewhat resistent to business cycles. The agricultural line represents a needed product that will be increasing in demand throughout the foreseeable future. The Gulfstream II should continue as a strong product as long as large companies find deteriorating airline service unable to satisfy their needs for efficient travel. Meyer feels the light-aircraft line may be the most vulnerable part of his product mix, but he plans to use the impressive technical clout of the Grumman organization to build in the type of utility that will make his product needed even in less-affluent times. The Grumman connection has reached American Aviation with all its youthful spirit and has transformed the firm into a real comer.



Grumman American Story

Savannah: Riding the Gulfstream Current

Building and marketing the world's top business jet. If you have to ask the price...

by Richard B. Weeghman

IF THE MANAGER OF THE Gulfstream II plant at Savannah has nightmares about the coming of the Cleveland hordes, he doesn't let on. If his production-flow engineers twitch at the prospect of nesting flocks of little bonded airplanes among the stately production lines of the giant Gulfstreams, they don't show it.

"See," says A. H. "Goldie" Glenn, general manager, "We're already setting up our computers to handle the Cleveland payroll, and over there we're turning out wheel components for Trainers and Travelers."

Outside, in a big, adjacent field, earth-movers scrape away, preparing for a new building to help handle the increased production demands.

Nevertheless, it's hard to imagine a more implausible combination than Cleveland and Savannah. It's Slippery Rock and Harvard, Gimbels and Tiffany, Othello and Desdemona, all rolled into one.

Where they crank out hundreds of Trainers and Travelers, and now Tigers at Cleveland, they conjure up no more than 22 Gulfstreams a year at Savannah. Where they fabricate airplanes almost from scratch at Cleveland, roughly 70 percent (by cost) of each Gulfstream is made by somebody else under subcontract and shipped in for assembly at Savannah: everything from complete sets of wings to little riveted fittings and brackets. Of course, there's still a staggering amount of work left to be done. Figure on 30,000 man-hours per airplane, compared with maybe 500 or 600 for a Trainer or Traveler.

The gestation period for each Gulfstream works out to an astonishing nine months, from the time the first component is bolted together until the completed airplane rolls out the door in grungy green and flies off to receive sumptuous interior fittings and a jacket of paint suitable for reflecting the smiles of moguls, titans, emperors and board chairmen.

Needless to say, Gulfstreams don't come off plain pipe racks. You don't kick the tires and buy a Gulfstream out on the ramp after working a deal with the salesman. The first rivet is not hammered until 20 percent of the price is handed over, followed by another 40 percent half way along the production route and the remainder on delivery.

Each airplane is custom tailored. Each is an event of such consequence, interest and investment that not infrequently the owner-to-be will delegate a kind of engineering "nanny" to oversee the entire construction process. Says Glenn, "They may be here the entire nine months. They check everything that goes on and sometimes even complain about some component or other. We welcome them. They have the run of the plant for the whole nine months, if they like."

Savannah, it turns out, is more than just an assembly plant. It is Queen Mother to the Gulfstream hive and jet crew commonwealth. On a big map inside, quilled with little marker flags, the extent of this dominion becomes evident. There are 200 Gulfstream I turboprops and 154 G IIs swarming about the globe. But they all come back, or most do, at one time or another, since Savannah not only builds Gulfstreams, it maintains them, services them and provides full pilot training for the crews.

Grumman shares a complete training facility at the plant with FlightSafety, Inc., providing classrooms, elaborate aircraft systems models and the only G I and G II simulators in the world. New crews check out there, and old ones come back for refresher training, usually while their aircraft are undergoing service.

There is no conventional dealer service network. Instead, there are four emergency parts stockrooms maintained by Grumman in the U.S. and overseas. In Europe, the job is handled by Marshall of Cambridge Ltd., in England. If a gronkel tube should snap in Madagascar or Outer Mongolia, the Savannah factory has the ability to dispatch help—from somewhere—within a day or two. Outside facilities, like AiResearch, fill in the gaps.

As a rule, flight departments of the companies that own Gulfstreams handle routine overseeing maintenance. In 1974, only four sales were made to companies not having their own aviation departments, and these were all overseas. Incidentally, figure on 6.25 man-hours of maintenance for each hour of flight time—4.5 for the airframe and engine and 1.75 for the avionics.

Wonder about costs? As one Grumman American spokesman has commented (perhaps in an unguarded moment), "You can't justify one of these airplanes in terms of money." What he was referrring to was the cost savings of a G II over some other type of

transportation. The current price of a Gulfstream II in the "greenie" condition is about $4.3 million. On top of that, the owner can expect to spend around $1.2 million for a customized interior and avionics, for a total cost of $5.5 million. These are 1976 delivery prices, since '75 is already sold out. To get a proper perspective, keep in mind the fact that used airline jets of the DC-9 and 727 category are available for less.

What kind of market exists for this kind of airplane? "Sixty percent of our sales are to Fortune 500 companies," says Charles G. Vogeley, senior vice president of marketing. "Our principal market is with companies with international requirements. A rough criterion is any company with a billion dollars a year in gross business."

Another is any African country with a head of state. Leaders in Uganda, the Ivory Coast and Togo own Gulfstream IIs.

With the current demand for G IIs so high that they're backlogged for a year, why doesn't Grumman American step up production above the 22 per year programmed for 1976 through 1978? They built 36 in 1968 and 1969 (at the Grumman works in Long Island, New York), their first years in production (against an initial order backlog of 60 aircraft before they even started the line).

It appears that the company is sticking with a conservative approach as the most sensible one in a bizarre economy. After the initial big production years, the company built only six, 12, 16 and 18, respectively, in 1970 through '74. According to Glenn, the company traditionally attempts to shield its work force (now 700 at Savannah, versus about 350 at Cleveland), from the economic ravages of feast-and-famine production.

Therefore, when orders drop, components that were subcontracted out can be brought back for in-house production, helping to maintain employment stability at the home plant.

"We hire for life," says Glenn.

Whether or not the resulting worker loyalty pays off in the quality of the product, there's no doubt that the product is far out. A typical G II is a small flying Taj Mahal, high enough inside for a person to walk around. You can switch divans and bars and work tables around, of course. With a full load of fuel, the aircraft will accept a complete, standard, luxury load of 12 passengers and three crewmen and still handle a 2,860-nm NBAA range mission.

That translates into transcontinental and transatlantic flights. With decent winds, London is within range nonstop, from New York, for example, though some people feel that is pushing things a bit. A stop at Gander, Newfoundland from almost anywhere in the States, however, gives the Gulfstream II traveler most of Europe as his oyster.

No slouch in speed or altitude, the G II can hold a maximum cruise of .85 Mach or a normal transcontinental cruise of .80 to .82 Mach (or .75 to .76 Mach, with bad westerly headwinds) for a nonstop crossing.

The aircraft is certified to 43,000 feet (after a usual step climb to 37,000 or 39,000 feet), with a cabin altitude of 6,000 feet at FL 430. Yank both engines back to idle for a high-speed descent, and you still have full pressurization.

Although the G II started off with a fairly substantial payload handicap when loaded with full fuel, the gross weight has since been upped twice from an initial 58,000 pounds to 60,000 pounds and finally to 62,500. This allows a 2,782-pound typical payload, meaning 15 passengers and crew and 232 pounds of baggage.

To meet noise requirements, the company is preparing to start installing fluted tailpipe "hush kits" on its Spey engines starting this June. And to compensate for an expected one- to two-percent range loss, new tip tanks, now in wind-tunnel tests, will be offered in mid-'76. Each tip will hold 2,000 pounds of fuel and offer about an hour's cruise, or 400 nm. To handle the extra load, the gross will be raised to 66,000 pounds.

And if all of this doesn't satisfy the "discriminating" Gulfstream II owner, he probably can unload the aircraft for as much as he paid for it. That's an indication of the esteem in which the Gulfstreams are held. □

The Gulfstream II costs $5.5 million and takes nine months to build. Not a rivet is hammered until a down payment is made.

See your local Grumman American Dealer or contact the regional manager in your area

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