

FIRST PILOT REPORT:

NEW GRUMMAN COUGAR TWIN!

# Plane & Pilot

SEPTEMBER 1977 \$1.25

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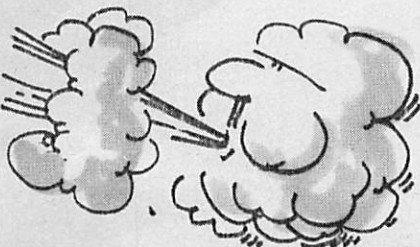
## Gusts and Blusters

If you've got quite a few hours under your seatbelt, you'll know how dangerous a sudden shift in wind direction and speed can be.

What you've experienced is "wind sheer", and in some cases, these gusts and blusters occur very close to the ground... making takeoffs and landings difficult and sometimes dangerous.

If you run into a wind sheer situation while you're up in the air, the first thing you should do is report the altitude and location to the nearest ground facility. This will make it possible for other pilots to be alerted to these conditions.

In the meantime, you might write the DOT/FAA Distribution Unit, TAD 443.1, Washington, DC 20590, for a new FAA Advisory Circular (AC 00-50) titled "Low Level Wind Shear". This new circular is free and describes how to recognize and minimize the effects of wind sheer.



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*Thanks to the FAA General Aviation News for providing the story line for some of our articles.*



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Enclosed are my dues for membership in the Pilots International Association Inc. I understand that my dues are \$9.50 per calendar year. Included in this amount is a \$4.98 subscription to *Plane & Pilot* for the calendar year coinciding with membership. (Please pay in U.S. funds. Make check payable to PIA.) Persons residing outside of the United States except APO, FPO, Canada, Mexico, and Puerto Rico add \$1 to annual dues.

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11/76



# GRUMMAN AMERICAN'S NEW TWIN: THE COUGAR

By Bill Cox

LAUREL SMITH OF Grumman American's public relations department likes to tell the story of the man who was touring the company's Savannah plant recently and spotted the prototype of the new GA Cougar. Impressed by the airplane's clean lines, the man asked all the standard questions about the test program, production plans and projected performance. Smith was characteristically non-committal. Still curious, the tourist asked if Grumman American would be willing to sell the prototype after all the test work was complete and, if so, for how much. Smith's answer was, "We'll let you have it for cost."

Development of any new airplane is an expensive process, and any company willing to take the plunge to ride a new design through to certification has to be very certain of the airplane's potential. The cost becomes even greater when the airplane has virtually no similarity to existing models. Such is the case with the Cougar. Though originally conceived as a retractable twin Tiger, the Cougar has evolved as an entirely different breed of cat. It bears little family resemblance to its single-engine predecessors and even less to the airplanes with which it will compete.

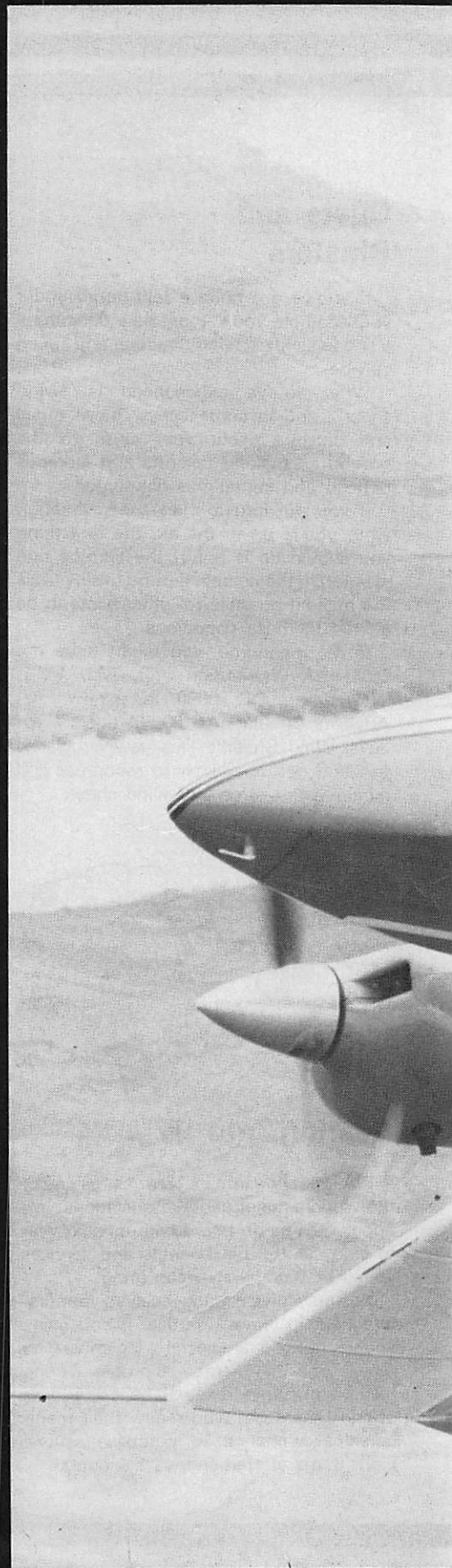
In one sense, at least, that's probably appropriate. The Cougar is the result of an extensive market survey that revealed a gaping hole at the bottom of the light twin market. Three years ago when Grumman merged with American Aviation and decided to broaden the company's product line, a small twin seemed the most

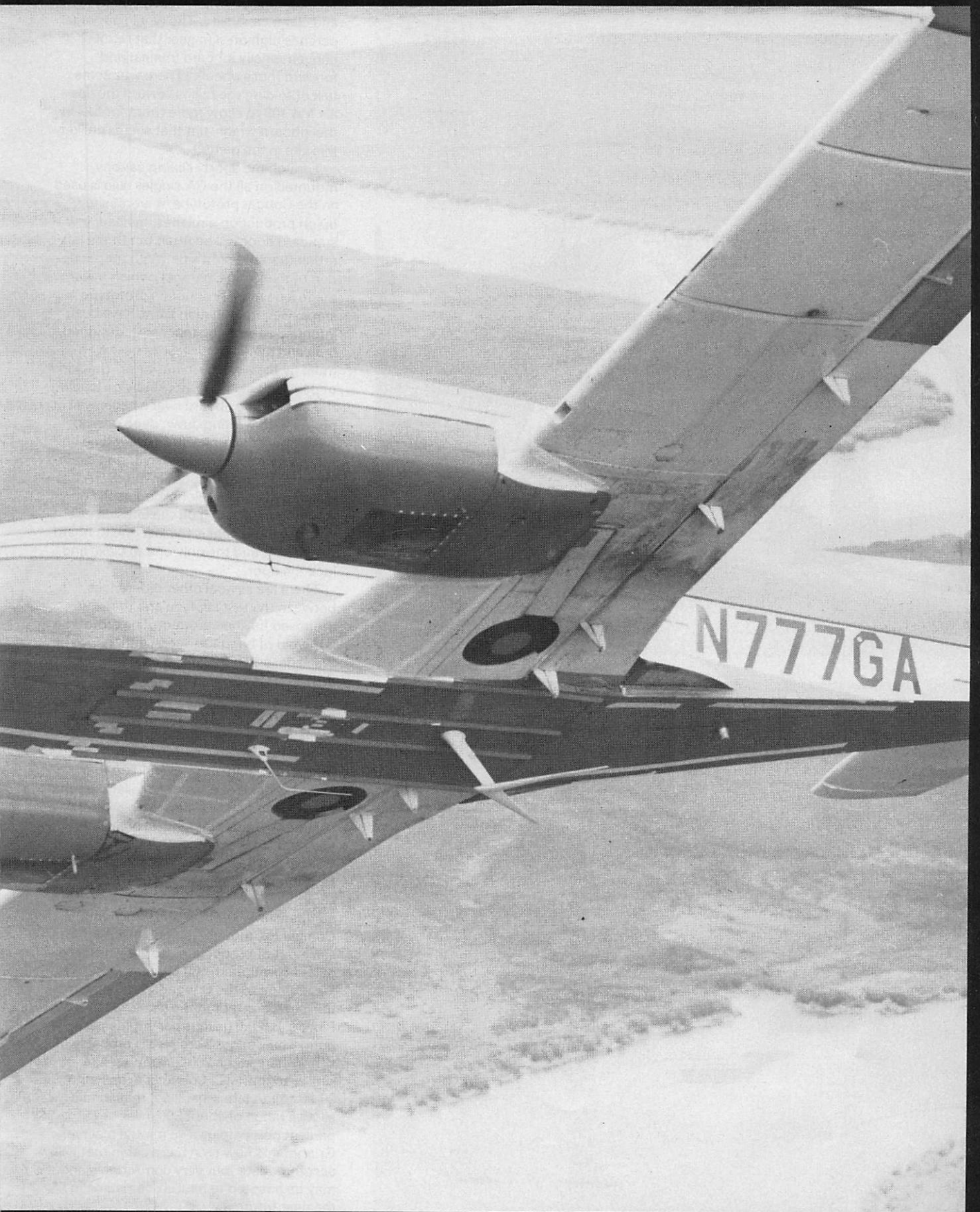
logical addition. The plan was to build a minimum-cost multi that would appeal to a broad cross section of General Aviation pilots who might otherwise wind up buying Senecas, 310s or Barons.

Now, in late '76, the Cougar is a reality. By February or March of next year, the first production Cougars will be rolling off the line at the rate of about two a week, and it's interesting to speculate on the airplane's reception.

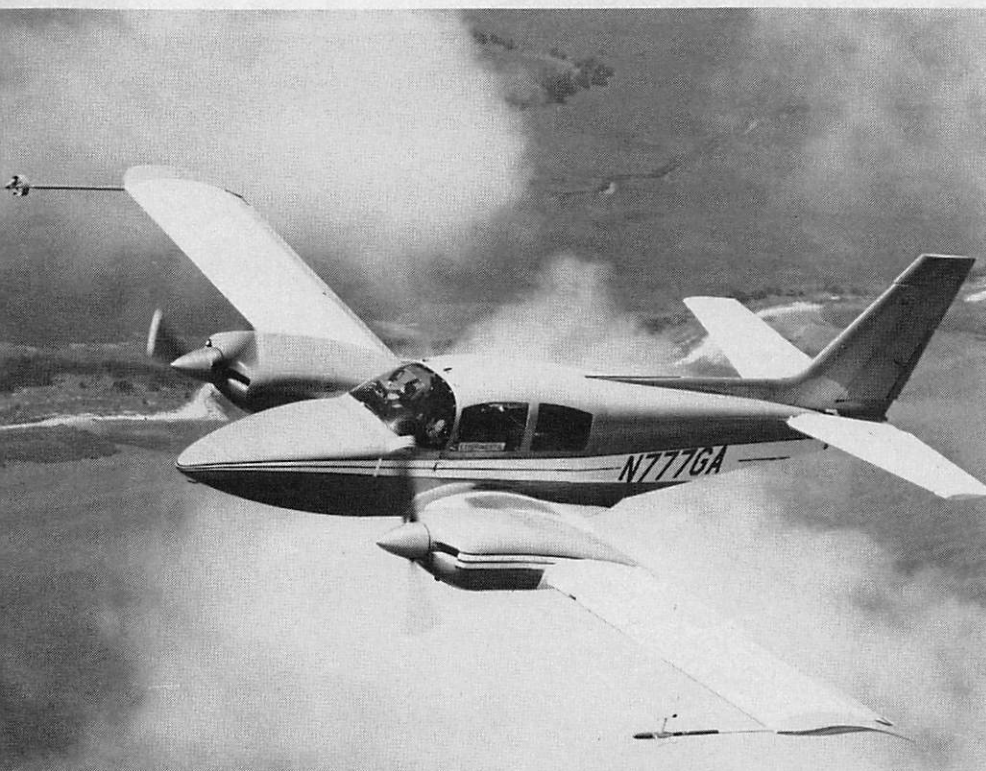
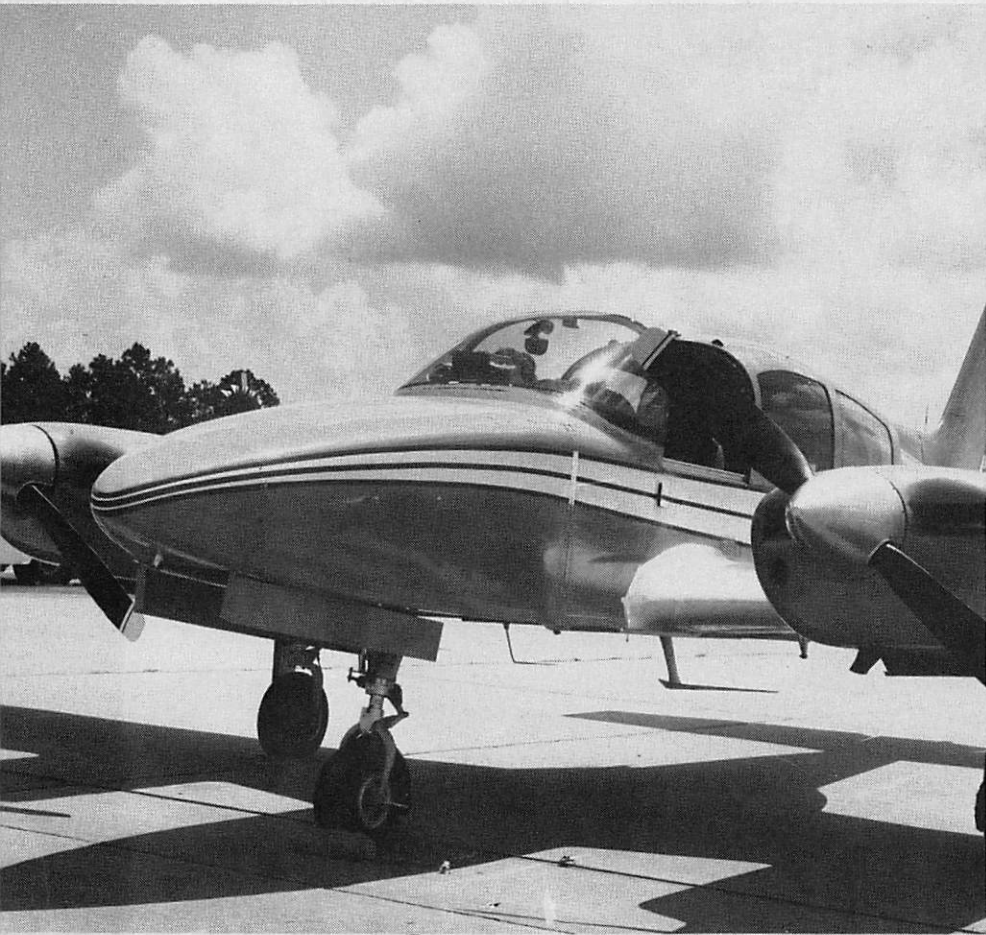
To find out more about the new airplane, I recently flew down to Savannah and spent a day photographing the prototype, talking to test pilot Lloyd Bingham and trying to pry loose some of the expected performance figures. Unfortunately, it wasn't possible to fly the airplane, as flight tests weren't yet complete, the design was not certificated and the prototype's performance might not necessarily have been representative of the final production model's. (Only Bingham, another test pilot and company president Corky Meyer had flown N777GA at the time of my visit.)

On first meeting, the Cougar is a physically impressive airplane. Though it's intended to fill a vacuum at the bottom of the twin market, its size is more reminiscent of a Baron or 310. The fuselage is long and sleek with a pointed nose and mildly raked tail. The vertical stabilizer is large in comparison to fuselage height, suggesting good rudder control at low speeds or during asymmetric thrust conditions. Similarly, the wing is relatively long with a short chord to provide range, ceiling









and climb capability. The whole package perches high on slim gear that retract conventionally inboard (mains) and forward (nosewheel). (There was some talk of folding the mains toward the tips ala Me-109 to allow more room for fuel in the inboard wings, but that seems unlikely this late in the game.)

Though the sporty sliding canopy mounted on all the GA singles also is used on the Cougar prototype, it won't show up on production airplanes. Instead, a standard door will be fitted but to the left rather than the right side. With the exception of the Wing Derringer, which never made it past the production prototype stage, General Aviation twins have been intended as working machines, designed, built and priced for a class of user who must fly the airplane in business. That kind of pilot isn't likely to look kindly on loading the boss's wife aboard over a cabin wall or put up with wetting down Jepp charts, passengers and upholstery every time it's necessary to open the hatch during a rain-storm. With that thought in mind, GA has decided the conventional door is the only way to go. Placing it on the left side will guarantee the pilot is the last one to board the aircraft and the only one to close and lock the door.

There are several other differences between the test airplane and the proposed finished product. The prototype is devoid of baggage doors, either nose or fuselage, and both will be mounted on delivered Cougars. In keeping with Grumman-American's commitment to aerodynamically clean bonded surfaces, the final version will forgo the prototype's riveted fuselage in favor of a fully bonded body. The cabin also will wind up four inches wider and a tad or so taller than that used on the test airplane.

Despite these differences, preliminary test data for the prototype indicate the Cougar will be a formidable competitor. In fact, the Cougar has all the earmarks of a super-economy twin. It's hard to avoid a comparison with Piper's PA-30 Twin Comanche, though that airplane is long since out of production. Both twins use a pair of carbureted, 160 horsepower O-320 Lycomings so the Cougar's fuel consumption should be about the same as the Piper's: 8.5-9.0 gallons per engine per hour. The Cougar's cruise will probably fall somewhere in the 200-205 mph range, similar to the Twin Comanche, and with 80-90 gallon tanks installed, that should allow a range of about 800 miles at 75 percent power (plus a 45 minute reserve). Grumman's new twin has a cabin that will accommodate four very comfortably and may be adapted to haul six sometime in the near future.



Early PA-30s were certificated at 3600 pounds gross, so the Cougar's 3700 pound target isn't surprising. In order to carry a reasonable weight of say 900 pounds, empty weight of a typically-equipped airplane will have to be maintained at 2300, again close to the Twin Comanche's 2200-pound bottom weight. Single engine climb should equal or exceed Piper's 260 fpm spec, and it's a safe bet ceiling with one engine shut down will be 7,000 feet or more.

On the other hand, the Cougar is alleged to have extremely docile engine-out manners at low speeds, whereas the early non-C/R Twin Comanches could get dicey if mistreated. The word at Savannah was that power-on stall and minimum control speeds are identical, and therefore loss of an engine during takeoff shouldn't present the serious directional control problems prevalent in other twins.

The multi-engine training role undoubtedly will account for a significant share of Cougar sales, and, in that role, the airplane should excel. Presently, the Seneca II is the least expensive twin built, and while it certainly satisfies the requirements of a trainer, it is perhaps more airplane than the job requires. Flight school economics being what they are, the cheapest often is by definition the best. By that yardstick, the four-place normally-aspirated, 320-hp Cougar may prove more popular for flight instruction than the six seat, turbocharged, 400-hp Seneca II.

Grumman's original premise, however, was to market the Cougar as an alternative to a high performance single. It's no coincidence the production airplane will fly with very much the same numbers as a 210 or Bonanza.

Implicit in such a scheme is that GA market the Cougar at a single-engine price. Because it's unlikely many twin buyers will opt for less than full IFR avionics, a reasonably-equipped Cougar will have to sell for something like \$80,000-\$85,000. Average list out the door for a new V-35B is \$82,000, and that's precisely the market Grumman-American hopes to tap.

There's also every reason to believe the Cougar is intended as an expansion twin. The cabin already is large enough for six souls, and engines to 200 hp should be easily adapted. As with the Baron and other existing twins, turbocharging and pressurization may not be far over the horizon.

In the beginning, though, the Cougar will have to prove itself amidst a well-established group of twins that have the market well secured. An educated guess is that the Cougar's uncommon combination of efficiency, economy and performance will make it a popular seller. ●





# A NEW LOOK IN AVIONICS FROM BENDIX

By Bill Cox

THERE'S NO DENYING avionics have come a long way in a very short time. In the span of only a quarter century, navigation and communications equipment has matured from vacuum tube, crystal-controlled, whistle stop beginnings to micro-computer, gas discharge digital display, auto squelch and Large Scale Integration circuitry.

Bendix has been a leader in the search for better avionics since the beginning, building primarily precision, high quality airline equipment, but now they've taken what may be a giant leap for radio technology in the medium price range. The Ft. Lauderdale, Fla., based firm recently introduced the results of two years of research and development; a new class of navigation/communication equipment that relies heavily on micro-processors, miniature digital computers with storage and calculation capability far beyond anything imaginable a few years ago.

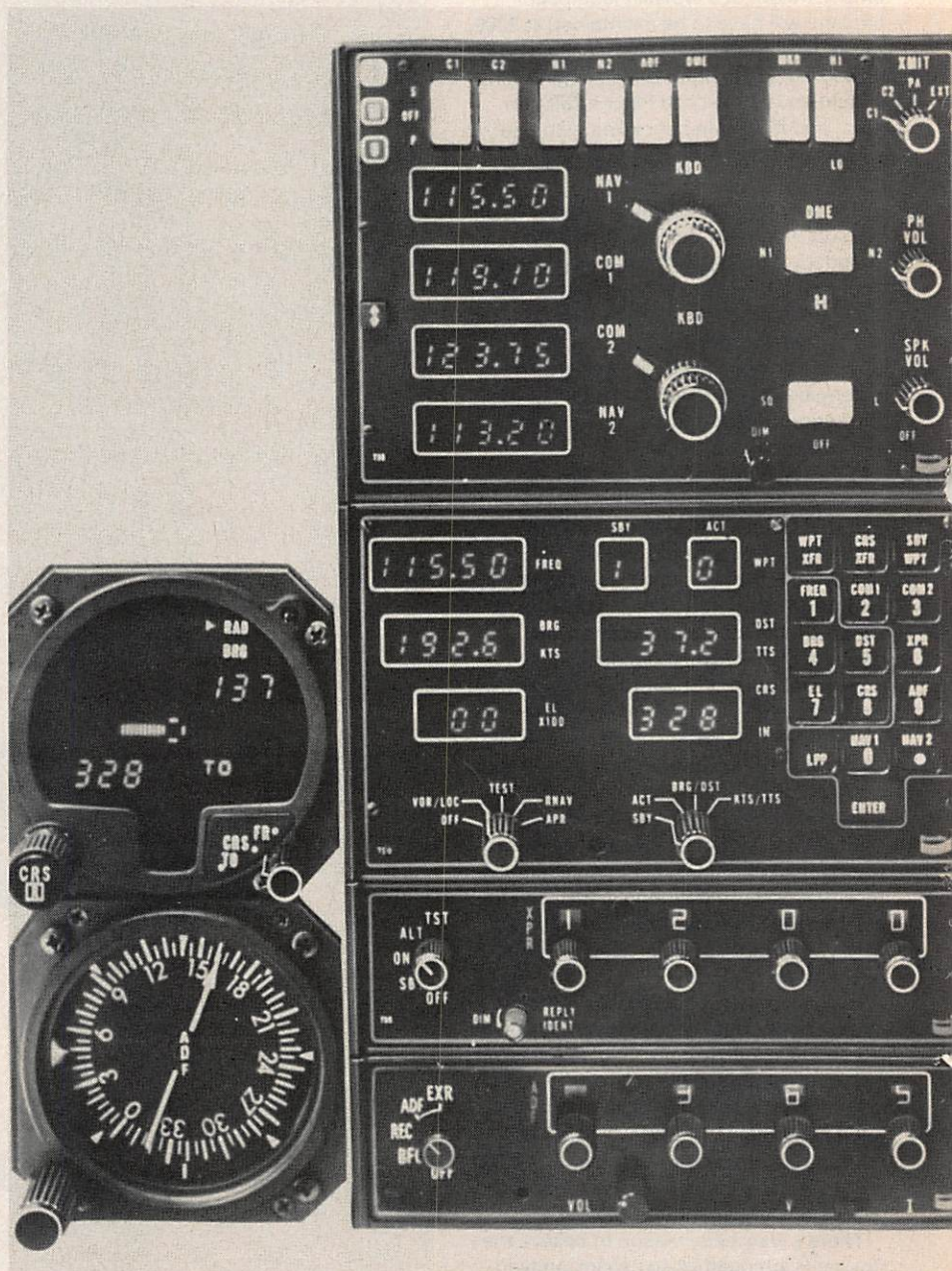
"Computers-on-a-chip," as they're known in the industry, have gradually become an indispensable requirement for consumer goods such as pocket calculators, watches, telephone systems, video games and other intricate electronic products.

In the avionics application, Bendix has developed a line of black boxes that include VHF navcoms and indicators, a DME, transponder, ADF, nav computer and radar system.

Of greatest interest to General Aviation is the new navcom lineup. Simplest and least expensive (\$1,870) of these is the 2013A. This is a basic 720/200 frequency "one-and-a-half" system that operates in com and nav modes similar to the KX-175. A selector at center is switched between nav or com to allow dialing in frequencies. A glideslope receiver and marker is a simple plug-in option on all the new Bendix navcoms.

Next step up is the 2012A, a memory-circuited radio that will store a com frequency for recall while a second com frequency is in use. Unlike other systems, the \$2,965 Bendix 2012A displays active and standby com frequencies simultaneously along with whatever is in the nav side. To swap the active for the standby frequency, the pilot merely presses the double-arrow switch, and the numbers trade places. The "KBD" select position allows the radio to receive commands from the new nav computer which we'll examine later.

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**MICROPROCESSOR AVIONICS BY BENDIX** — The BX 2000 System is a technically new system featuring Bendix digital success with the exciting microprocessor — the smart machines or computer on a chip. Along with the Electronic Course Deviation Indicator (ECDI) the entire system has only one moving part (in the ADF Indicator). The BX-2000 System features (top to bottom) the CN-2011A COM/NAV/ILS, with two transmitters, and four receivers; NP-1041A Navigation Computer Programmer, an exciting new system which includes the microprocessor to handle keyboard tuning, R-nav functions and DME readouts, to name a few; TRP-2060 ATC Transponder, designed with Large Scale Integration (LSI) and the ADF-2070, which features coherent detection for exceptional ADF performance. The ADF loop and sense antenna are part of the VHF Com blade — another breakthrough by Bendix. The only remote unit, not shown, is the DME-2030 which has a second microprocessor in the indicator when not used with a Navigation Programmer. The BX 2000 System represents a new advance in avionics and starts a new world of microprocessors.