



Aerospatiale is a massive French aerospace conglomerate whose products are known world-wide. The Concorde supersonic air transport, produced in cooperation with British Aerospace, is one of its most visible aviation products, which include the A-300 Airbus airliner and the Corvette business jet. It is a leader in the helicopter industry, and produces nine models, including the Gazelle, Dauphine and Alouette. A tactical missiles division constructs antitank weapons, while another division manufactures earth satellites and the rockets to

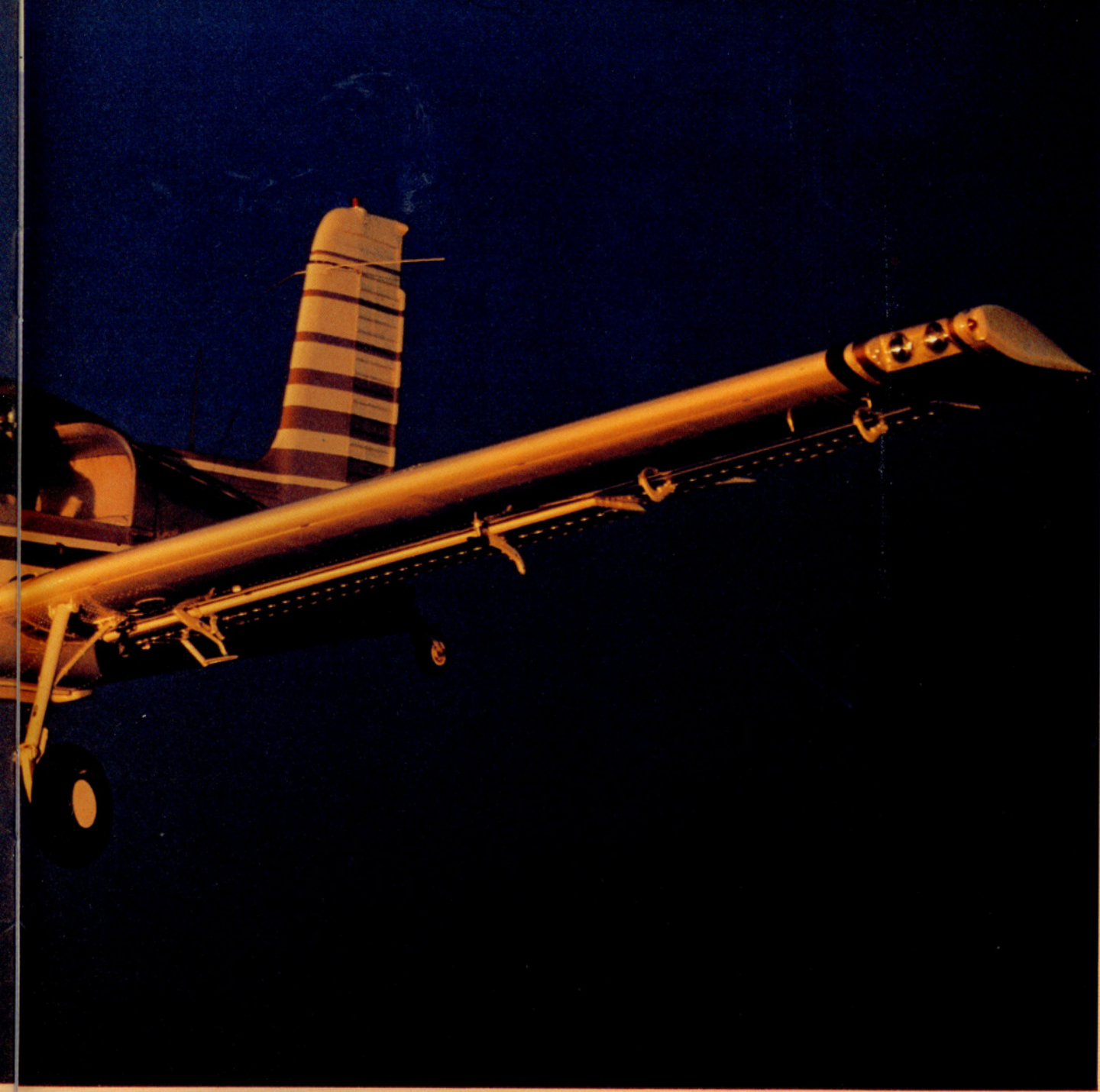
# Rallye 235C

*Getting off the ground—uphill in the U.S.*

ROGER ROZELLE

AOPA 537321





launch them into orbit. Other sections specialize in the development of electronic instruments and aviation maintenance.

Then there is SOCATA, the designer, builder and seller of Aerospatiale's light general aviation aircraft—the Rallyes.

Aerospatiale is marketing the airplane through its subsidiary in Morrisville, N.C., Rallye Aircraft Corp.

Three Rallye models, variations based on a low-wing, metal airframe with tricycle gear, have been marketed here since 1977. The variations are in

the Lycoming powerplants: 150-hp, 180-hp and 235-hp.

The company emphasizes STOL capability with all its models, but Rallye believed that it would be more utilitarian and marketable with a conventional gear airplane. It produced the conventional gear 235C in early 1979, based on the tricycle gear 235GT.

At first glance, the Rallye 235C has the appearance of a giant insect preparing to pounce (perhaps on an unsuspecting Maule M-5 Lunar Rocket, a 235-hp, four-place, STOL

taildragger manufactured in southern Georgia, its head-on competition). The bulbous airframe rests on the tailwheel; the main wheels extend ahead of the wing on forward slanted struts, creating the impression of digging in before a hungry leap.

While the aircraft's heritage is French, its powerplant is a Lycoming with solid U.S. roots. The 235-hp variant of the O-540 is intended for 80 octane fuel, but it will also burn 100LL.

The conventional gear provides good ground clearance for the



propeller blades, but makes oil checks inconvenient. The procedure is made a little easier by standing on the left main wheel, but very short people should include a ladder in their pre-flight equipment.

A fuel check is accomplished by removing a small metal cover from each wing, which allows access to the recessed tank caps. The caps are more like rubber stoppers than the lockable metal caps on most current U.S. aircraft. Although it is awkward to check the fuel because the wings are chest high, the procedure is no more difficult than checking fuel on a high-wing Cessna. The metal fuel tank in each wing has a capacity of 33.5 gallons (32.5 gallons usable). A 235C's tank carries 2.5 gallons less than a 235GT's; tank size is reduced because an extra rib has been added to each wing to support the repositioned main gear.

This imported taildragger is equipped with something else most pilots in the New World are not used to—automatic slats on the wings' leading edges. They run nearly the full length of each wing and remain flush against the wings until actuated. High angles of attack cause the low pressure air on the top side of the wings to move forward and pull the slats out. The slats are interconnected by a simple push-pull rod system.

*Some pilots may agree that controls labeled with picture-graphs may tell a story, but not answer the question "what does it do?"*

They are mounted at the end of metal tracks that ride on nylon rollers mounted inside the wings.

The extended slats enhance low-speed handling qualities. Slots are created between the slats and the leading edge of the wings, which promote additional lift and a smooth flow of air for lateral control. (Large slotted Fowler flaps, big ailerons and oversized rudder/elevators also contribute to slow-speed STOL control.) When the angle of attack is reduced, the slats retract flush against the wings.

Settling into the cabin isn't difficult once the sliding canopy is moved aft. The cabin is entered from either side after stepping onto the appropriate wing. A step on each side of the fuselage facilitates getting onto the wing; however, the first several inches of the aft section of each wing is a "no step" area, so some leg stretching (or careful cheating) is necessary. However, rein-

forcement of that section would probably be a better solution.

The rear bench seat is adequate for two and offers sufficient comfort. However, the wing spar crosses the cabin just aft of the front seats, so there isn't much foot room. The bench seat is not adjustable, so rear seat passengers wouldn't be comfortable on long flights.

A small baggage compartment is aft of the rear seat. There is no separate access door, so baggage must be lifted over the rear seat. Capacity is 100 pounds (55 pounds if all four seats are occupied).

The one-piece, molded front seats are very comfortable and can be adjusted fore and aft. There is sufficient room for the front-seat occupants so they aren't in each other's way.

The conventional panel layout is fairly good, with some annoying exceptions. A circuit breaker panel is on the lower right side; the radio stack is in the center; flight instruments are on the left; and electrical switches/controls are mounted on the lower panel below the flight instruments.

However, the manifold pressure gauge, not much larger than an old-time silver dollar, is a few inches to the upper left of the tachometer. The oil temperature, oil pressure, fuel



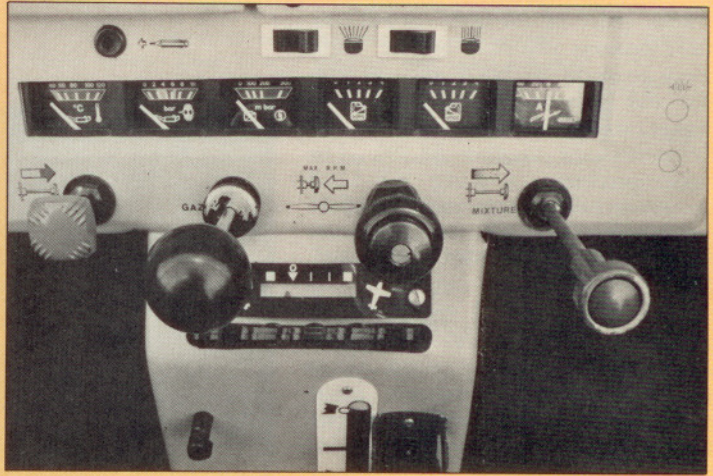
quantity and fuel pressure indicators are located along the lower center section of the panel. The optional cylinder head temperature and exhaust gas temperature gauges are mounted on the far right side of the panel. I would prefer having engine instruments grouped closer together.

Since the airplane is sold in more than 65 countries, the French have labeled the controls with picture-graphs, rather than plain English. The symbols are defined in the pilot's handbook, but most of them are self-explanatory.

A center console extends from the panel to the firewall, dividing the cockpit floor in half and taking away some foot room. The rudder and elevator trim wheels, electric flap control, and three position fuel selector—"left," "off" and "right"—are located in the center console.

Engine controls—throttle,





**Rallye  
235C**





propeller, mixture and carburetor heat—are located just above the center console. A second throttle is mounted on the left side of the cabin, flush with the instrument panel.

Basic price of the 235C is \$43,500. Basic options installed on the flight check airplane, N370RA, such as interior and instrument lights, dual toe brakes, strobe lights and vacuum instruments add another \$6,292. The radio package—a King KX-170B nav/com (with indicator), KT-76 transponder and KR-86 ADF—raise the list price of N370RA to \$55,409. The equipped empty weight is 1,569 pounds. With full fuel, the airplane's payload is 674 pounds—six pounds short of four 170-pound people. Gross takeoff weight is 2,645 pounds. However, the maximum landing weight, limited by structural design, is 2,513 pounds.

Closing the canopy can be a painful experience. The canopy is pulled forward with a rope-like handle. The slack rope allows one to swing a hand between the canopy and the windshield support for an unpleasant pinch. The best procedure is to use the handle to almost close the canopy, then push on the overhead locking mechanism housing to close it the last couple of inches or so. The locking mechanism is a very simple, one-handle affair and holds the canopy housing tight against a rubber seal. A second latch is located on the lower left forward section of the canopy.

Taxiing offers a sure-fire opportunity for misadventure to careless pilots. Forward visibility is poor over the nose, so S turns are necessary to see ahead; more daring pilots might poke their heads out the open canopy for a peek around the cowling. The tail-wheel is steerable, and the need for differential braking is minimal.

Mike Allen, a part-time demonstration pilot for Rallye Aircraft Corp., suggested that we try a maximum performance STOL takeoff for the first departure during our check-out.

The STOL procedure calls for full power with brakes on, full flaps, stick forward at brake release and liftoff at 48 knots (55 mph). The airplane, which was about 450 pounds under gross, lifted off the ground in less than 300 feet. The climbout was at a very steep angle; it grew even steeper as the airplane's nose was raised to maintain 57 knots (65 mph), the recommended maximum performance climb speed.

Initial climb rate was 900 fpm with the slats extended. The slats retracted when the nose was lowered to a normal climb speed of 95 knots (109 mph);

there is no noticeable change in pitch when the slats extend or retract.

Full throttle (23 inches of manifold pressure and 2,575 rpm) at 5,500 feet with the mixture leaned to peak +50 degrees rich (best power) produced an indicated airspeed of 122 knots (140 mph). The outside air temperature was 34° F (+2° C) and true airspeed was 133 knots (153 mph).

We expected a high noise level during cruise, especially since we were encased in so much plexiglass, but the aircraft is relatively quiet.

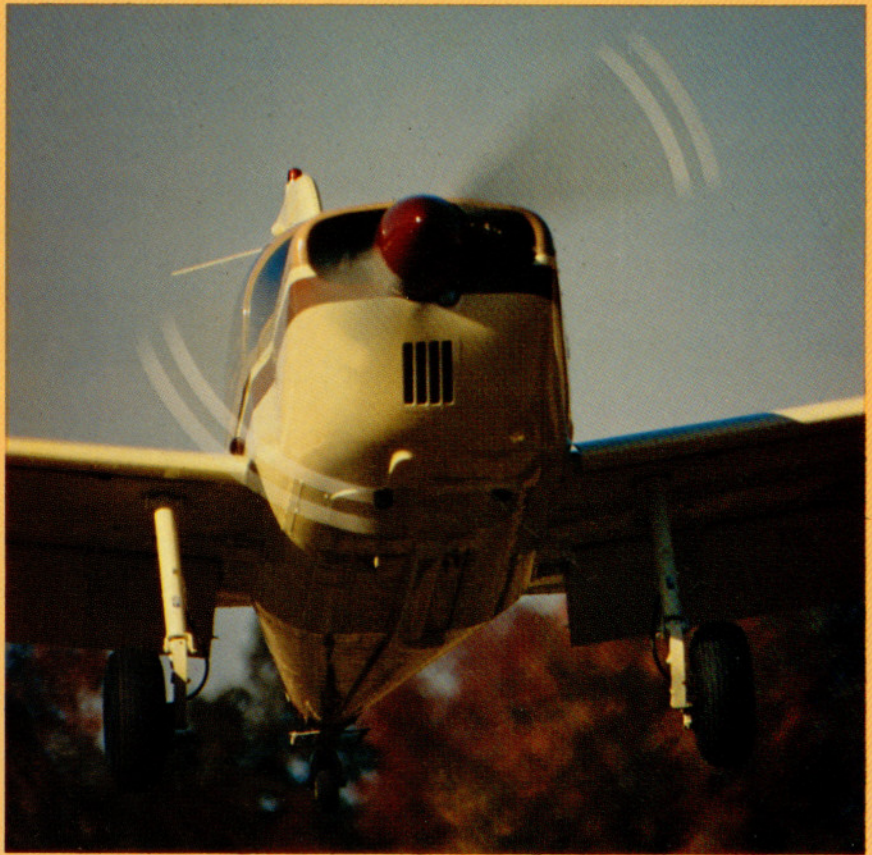
Visibility is superb. The tinted overhead panels and wide, clear side bubble combine to allow fantastic views. However, in warm weather, that much plexiglass is likely to create one heck of a greenhouse effect. Even

with the OAT hovering near freezing, the sun shining into the cockpit creates some uncomfortable heat.

Two large air vents are located in the instrument panel (where the yokes are located on 235GT's). They provide an adjustable flow of fresh air into the front of the cabin; the flow was sufficient, at least in the relatively cool air we flew in during the evaluation. An adjustable ball vent on each side of the rear cabin provides additional fresh air.

Controllability in slow flight is very good. Easing power back and slowly raising the nose brought the slats out with a noticeable thud around 70 knots (81 mph). With full flaps and the stick full aft, the airplane porpoised a tiny bit, but never developed more than a

## Rallye 235C



*The Lycoming powerplant up front is a prime contributor in turning the outback into airports for the semi-STOL 235C.*



100 fpm descent in a power-off stall; they were, in a word, docile.

Control forces were light; lateral control never degenerated into a to-and-fro motion of the ailerons to keep the wings level. Controls remained effective in 30-degree banks while the airspeed wiggled at the bottom of the scale near 45 knots (50 mph).

The addition of power changes the stall characteristics considerably. Holding the stick aft caused a very steep pitch angle without any well-defined breaks, and the airplane developed a 1,000 fpm descent. Cross controlling the airplane to the stop limits only caused a higher rate of descent—2,000 fpm. Yet, 30 degree-banks and even 360-degree turns could be carried out under full control, while the airplane continued its descent. Recovery is straightforward: release the controls or add slight forward pressure.

Power-on stalls with the stick held aft, ailerons neutral, and feet on the pedals revealed an intimidating tendency for the airplane to roll to the right. Allen admitted that he hadn't ever explored that regime. We did.

When the roll wasn't stopped, the aircraft banked 60 degrees to the right, then rolled 15 degrees back to the left and stabilized in a 45-degree bank. The airplane settled into a spiral dive that began to tighten after three turns. The airspeed never exceeded 95 knots (109 mph), the maximum flaps-extended speed, during our experiments.

We repeated the maneuver several times and recovery was effected by releasing the controls. There was never any tendency to spin.

Allen suggested that we fly to Bob Hogan's Airport, near Chapel Hill, N.C., for some STOL landings and takeoffs. Tall trees are on the approach end of the grass strip, which has a slight uphill grade at our agreed-upon touchdown point.

The suggested technique is for 70 knots (80 mph) on downwind with full flaps, controlling altitude with power. On short final, 2,000 rpm and 15 inches of manifold pressure held 60 knots (70 mph) on short final with a 400 fpm rate of descent. A touch of power was needed during roundout before touchdown. In our flights roll-out was completed without much effort in less than 300 feet. Takeoffs to 50 feet were accomplished in about the same distance. Allen could land the plane with a 150-foot ground roll. Practice obviously pays.

The airplane's STOL capabilities are impressive. However, much depends on power, and a pilot

### Rallye 235C

Basic price \$43,500

Price as tested \$55,409

#### Specifications

Engine	Lycoming 540-B4-B5, 235-hp @ 2,575 rpm TBO 2,000 hrs
Propeller	Hartzell, constant speed, 80 in
Wing span	31 ft 11 in
Length	23 ft 11 in
Height	9 ft 1 in
Wing area	132 sq ft
Wing loading	20 lb/sq ft
Power loading	11.2 lb/hp
Passengers and crew	4
Empty weight	1,526 lb
Equipped empty weight (as tested)	1,569 lb
Useful load (basic aircraft)	1,119 lb
Useful load (as tested)	1,076 lb
Payload with full fuel (basic aircraft)	729 lb
Payload with full fuel (as tested)	686 lb
Gross weight	2,645 lb
Fuel capacity (standard)	67 gal (65 usable)
Oil capacity	12 qt

Baggage capacity

100 lb

#### Performance

Takeoff distance (ground roll)	1,181 ft
Takeoff distance STOL (ground roll)	540 ft
Takeoff over 50 ft	1,640 ft
Takeoff over 50 ft STOL	845 ft
Rate of climb (gross weight)	969 fpm
Maximum level speed (sea level)	
	148 kt (170 mph)
Cruise speed (75% power, 6,000 ft)	
	130 kt (151 mph)
Cruise speed (55% power, 6,000 ft)	
	122 kt (140 mph)
Range at 75% cruise (with 45-min reserve)	
	445 nm (512 sm)
Range at 65% cruise (with 45 min reserve)	
	522 nm (601 sm)
Service ceiling	14,800 ft
Stall speed (gear and flaps down)	
	56 kt (64 mph)
Landing distance (ground roll)	541 ft
Landing distance STOL (ground roll)	435 ft
Landing over 50 ft	1,296 ft
Landing over 50 ft STOL	765 ft





operating near and beyond the edge of the 235C's operating envelope—or any other airplane's—stands a good chance of being bitten if the engine quits during a high performance departure or landing.

Although SOCATA factory pilot Maurice Sereé often uses a 235GT for airshow appearances that include loops, rolls and other aerobatic maneuvers, the airplane is not approved for those maneuvers in the U.S. or France (he has a waiver for airshows); the 235C isn't approved for aerobatics either.

## Rallye 235C

Compared to the Maule M-5 Lunar Rocket (*Pilot*, May 1979), the Rallye comes out on top in several areas: visibility, noise level, workmanship, fuel system simplicity and low-speed handling. The Maule is better in cruise speed, baggage capacity and ground handling. Also, the Maule's high wing is better on narrow run-

ways, and the fabric covering is easier to repair.

In an era of rampant inflation, the Maule is the hands-down winner in price: a Maule outfitted with dual King KX-175B nav/coms, KN-62 DME and a Mitchell Century 11B autopilot sells for about \$3,000 less than N370RA.

There are appealing qualities in both aircraft—and both are very distinctive. Would-be purchasers of a 235-hp STOL, four-place taildragger are fortunate to be able to have a choice of aircraft. □

## Rallye Redux



In 1958 the French government encouraged a national competition to design an "everyman's" light plane. Design objectives included low-cost, reliability and, most importantly, safety.

The winner was the Morane-Saulnier 880A Rallye (French equivalent of the English word, rally), an all metal, three seater that could be converted from a nosewheel to a tailwheel version in less than half an hour. The prototype first flew in 1959 with a 90-hp Continental engine. Two years later, United States FAA type approval was obtained for the M.S. 880B Rallye, which was powered by a 100-hp Continental. A 145-hp model was also produced before the company went bankrupt in 1963.

Another respected French aviation orga-

nization, the Potez Company, bought the Morane-Saulnier facilities. Potez not only had a reputation for building airplanes, but engines as well. Several versions of the Rallye appeared with Potez powerplants. Later, when the engine company formed a partnership with Avco to produce Lycoming engines for the European market, Lycoming powerplants began to appear in the Rallye.

Much of the French aviation industry had been nationalized since 1936. Potez transferred the Morane-Saulnier operation to a subsidiary of one of the nationalized groups, which was later absorbed by still another nationalized subsidiary of Sud-Aviation, SOCATA (Société de Construction d'Avions de Tourisme et d'Af-

fares). SOCATA became the general aviation subsidiary of Aerospatiale, the nationalized aerospace conglomerate, in 1970.

Although the French had intended to market a Rallye model in the U.S., it wasn't until 1968 that it became a reality. In that year U.S. FAA type approval was received for the M.S. 894 Rallye Commodore 220.

The airplane was marketed in the U.S. by the Waco Aircraft Corp. as the Waco Minerva 220. It was powered by a Franklin 220-hp, six-cylinder engine. A Franklin-powered 125-hp model was also in the works for the U.S. market, but it was never certificated.

(Waco Aircraft Corp. and the Franklin Engine Co. were subsidiaries of Allied Aero Industries.) Waco marketed the air-



## Rallye Redux

plane until 1971. In 1972, exclusive U.S./Canadian distribution rights were awarded to B.F.A. Aviation, Inc., who agreed to purchase 300 Minerva 220 models by the end of 1974. It didn't.

A total of 250 of the Franklin-powered M.S. 894 Rallye Commodore 220 models were produced, but fewer than 60 of them reached the U.S. market. By 1974 there was no longer an organized effort to sell them in the U.S.

In 1977, SOCATA announced that it was entering the U.S. market and established an American subsidiary, the Rallye Aircraft Corp., to sell three Lycoming-powered variants—150-hp, 180-hp and 235-hp—of the airplane.

Alain Brunais, a 31-year-old Frenchman and president of Rallye Aircraft Corp., directs present-day marketing efforts from headquarters in Morrisville, N.C., near Raleigh-Durham. He admits that his company is fighting an uphill battle to win a share of the market, a situation made more difficult by the earlier attempts to sell Rallyes here.

"We had nothing to do with those programs," claims Brunais, somehow overlooking the fact that SOCATA built the airplanes for the U.S. market. "Those were U.S. companies that bought planes from SOCATA and then resold them in this country. But they had no after-sales service and people became unhappy."

Wherever responsibility for problems of the past may be placed, the company is emphasizing service as one of its strong points in the latest assault on the U.S. general aviation market.

Brunais claims that use of U.S. parts on high maintenance items is sure to ease servicing problems. Cleveland wheels and brakes, Lycoming engine, Hartzell propeller, and U.S.-produced radios/instrumentation, he hopes, will ease buyer reluctance.

Still, there are many items—ranging from nuts and bolts to the landing and taxi lights—not found on the shelves of local FBO's. Most of those parts are metric.

"We try to stock those parts," says Brunais, as he opens the doors to two small storage rooms filled with miscellaneous spares. "We guarantee shipment within 48 hours."

Brunais is trying to build a dealer market, not a retail market. He currently has 10 dealers and has taken special pains to establish dealers where general aviation operations are heavy, such as California and Ohio.

A would-be dealer needs a full-time office and maintenance facilities, as well as a \$70,000-\$80,000 line of credit to purchase two airplanes. The prospective dealer is



*The Rallye taildragger has come a long way from its first-born cousin (above), a three-seat, tricycle gear aircraft powered by a 90-hp Continental engine.*

guaranteed a specific marketing territory on a one-year contract, but he has to sell airplanes and provide good service, or Brunais will find a new dealer at the end of the initial contract.

"We must establish our credibility," says Brunais, who said two dealers quit the ranks last year and three others were cancelled.

Free training is offered to a dealer's mechanic, but Brunais said only half of the dealers take advantage of it.

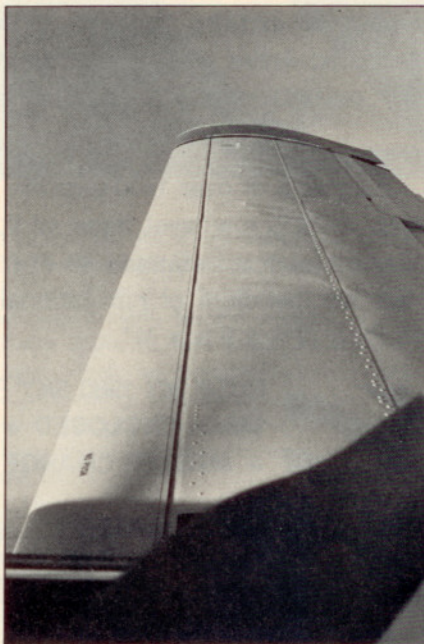
"We provide a complete set of service manuals and metric tools to all the dealers," explains the Rallye president, who has had previous assignments with SOCATA in Africa, New Zealand and Australia. "For the most part the airplane is very simple. However, the slats, trim controls and shock absorbers may require some explanation to a mechanic."

Training is given at Raleigh-Durham Aviation, which has the contract to build

the subassemblies after they arrive in this country. Brunais says that a mechanic who helps assemble one of the airplanes can acquire enough knowledge to cope with almost any Rallye maintenance problem that could arise.

Actually, Rallyes assembled by RDA are being fitted together for the second time in their life-span. The aircraft are assembled in France, test-flown and certified. Then the wings and landing gear are removed and the engine is "pickled." Two unpainted aircraft are loaded into one crate and shipped to Wilmington, Del., or Norfolk, Va. They are trucked to Raleigh-Durham, where they are reassembled, test-flown and signed off. Then they are flown to Aiken, S.C., for an Alumigrip paint job at Harrington Industries.

"It takes about 45 man-hours to assemble an airplane, fly it and work off any squawks," says Keith Stubblefield, the 31-year-old mechanic in charge of the opera-



*The slats remain flush against the wing in normal flight, but extend down and out at high angles of attack and enhance the airplane's low speed handling.*



continued

## Rallye Redux

tion. "We average two airplanes a month."

François Dubord, a technical representative, who has been with the Rallye program for 20 years, oversees Stubblefield's work and provides technical assistance to dealers. There is a slight problem however; he speaks no English, so two interpreters are on the Rallye payroll.

"Some of the dealers resent having to deal with him through an interpreter," says Brunais. "However, no English speaking person has his knowledge of the aircraft. He is an asset and we need him."

When disassembly, transportation, reassembly and other costs are factored into the selling price of the airplane, Brunais claims that the airplane sold in the U.S. goes for a lower price than the same airplane sold in France.

"The political bureaucracy is very complex in France," says Bruanis, who credits politics as the prime contributor to the high cost of aviation in France.

"Today, French aviation is considered a luxury of the rich. The government assumes that if a person flies, he has a lot of money. So there are very high taxes—17.5%—placed on airplanes.

"Fuel is also very expensive—about \$3.00 a gallon—and there are many flight restrictions, so the average pilot only flies about 15 hours a year. And that figure is dropping."

It seems bizarre that a country which encouraged the development of an "everyman's" airplane, has nearly legislated general aviation out of existence in its own country a mere two decades later. Yet, the nationalized aerospace industry recognizes that light airplanes are still a vital business tool in other countries. It is stepping up efforts to export airplanes with a sales pitch based on stressing the Rallye's utility. It does well as a tow-plane for banners or gliders, and can be reconfigured as a single-stretcher air ambulance. And the French go so far to say that it makes a great jump-plane for parachutists, since the canopy can be opened in flight.

More than 3,500 Rallyes have been sold in more than 65 countries. Although only four Rallye models are offered in the U.S., there are other models produced by the French manufacturer. For instance, a military version of the 235GT has underwing pylons for carrying rocket launchers, machine guns, bombs, surveillance equipment and rescue packages.

"In order to sell more Rallyes, we must continue to develop new export markets and introduce new products," says Brunais with a smile. "We have sold 60 Rallyes in the U.S. since 1977.

"Regulations in France make it impossible to rely on general aviation in that country as a business tool. Fortunately for us, this is not the case in the United States."—RR