



Skyote Biplane

Pete Bartoe's single-seat homebuilt; it's no quick-built project.

BY HOWARD LEVY

Skyote is a single-seat, fully aerobatic homebuilt biplane stressed to +9 and -6 Gs for Part 23 aerobatic category. The airplane came off the design board of aerospace engineer O. E. "Pete" Bartoe, former President of Ball Brothers Research Corporation, a Boulder, Colorado, company involved with aerospace research and development contract work for the U.S. government (missiles, Orbiting Solar Observatory). Bartoe resigned as president of Ball Brothers in 1973 to head a newly formed Ball subsidiary—Ball Bartoe Aircraft Corporation at Boulder—in order to spend full time on a new airplane he had designed. This aircraft, known as Jet Wing, was a proof-of-concept vehicle employing propulsive lift which included boundary layer blowing of the wing with hot and cold

air, Coanda flaps and more. It was powered by a single 2200-pound-thrust Pratt & Whitney JT15D-1 turbofan from a Cessna Citation and had a speed envelope of 46 to 345 mph. The Jet Wing could (and did) fly formation with a Piper Super Cub.

However, Pete Bartoe is also a weekend pilot, having owned a Tiger Moth and a Super Cub. When Bartoe decided to build the prototype Skyote in April, 1974, he called Brad Davenport, an A&P mechanic who had helped him build the Jet Wing. Together they welded up six fuselages. The press of other business prevented rapid completion of Bartoe's Skyote, and it didn't make its first flight until July 4, 1981.

Bartoe had originally planned to certify the Skyote for production and had intended to use serial numbers 1 and 5

Not yet covered, this Skyote reveals details which will keep the homebuilder busy for thousands of hours.

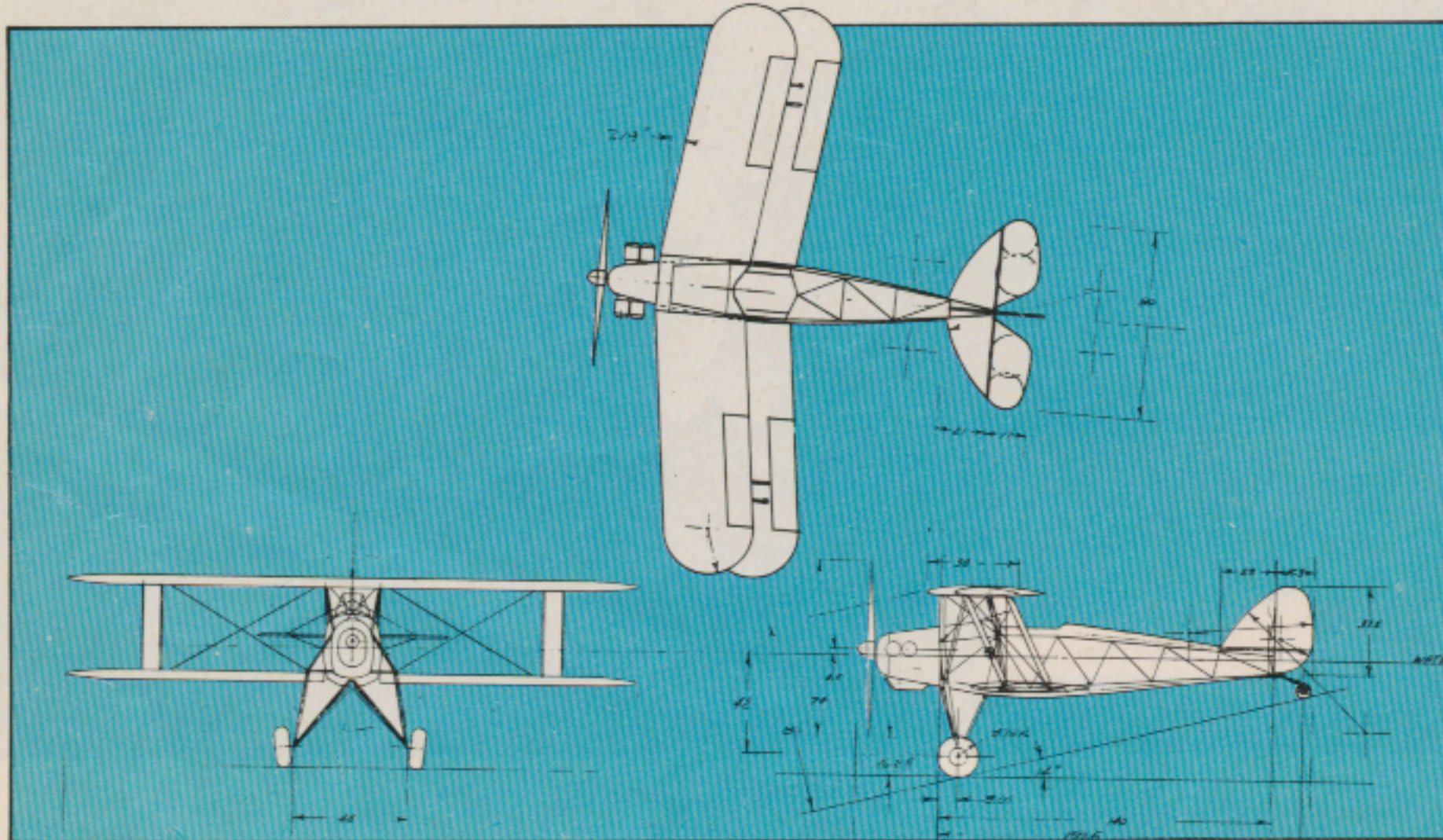
for type certificate compliance and number 6 for testing and marketing. Numbers 2 through 4 would become custombuilt craft for completion by the individual homebuilders. As it turned out, Brad Davenport completed serial number 6 and it made its initial flight in April 1976, powered by a 90-hp Continental C-90. Bartoe's own Skyote employed airframe serial number 1 and was powered by a 118-hp Lycoming O-235-K2A. Credit for completing the first custombuilt Skyote goes to Duane L. Burnett of Boulder, Colorado, who used airframe number 3. He completed construction of his biplane in the summer

of 1978 after investing 2500 manhours and \$7000. Powerplane was a 100-hp Continental O-200 swinging a 70-inch McCauley propeller with 50-inch pitch. The Davenport Skyote used an Aero-matic F200 controllable-pitch prop. Bartoe's plane had a 72-inch diameter, 50-inch-pitch Sensenich propeller.

The Skyote has a metal airframe with fabric covering. Bartoe makes a point that the wings are an all-aluminum structure with many parts

that have been designed to be light and strong. The design, however, is not simple for home-workshop fabrication. The hydroformed ribs—nine per wing panel—are among the most difficult of the major parts to be produced. The builtup I-beam spars of 2024-T3 aluminum, each about nine feet long, are also difficult. Spars are built up of a web having four spar caps. The wings

Designer Pete Bartoe withdrew Skyote plans from the market in spring, 1986, but continues to supply wing and rib kits to previous plans buyers.



Skyote

Prices:

Plans, \$275; wing kit, \$3100; prefab ribs, \$2200; info pack, \$2.

Specifications:

Wingspan 20 ft.
Wing area 123 sq. ft.
Wing chord (avg.) 3.16 ft.
Aspect ratio 4.22
Overall length 16 ft.
Overall height 6.67 ft.
Wheel track 4 ft.
Wheelbase 12.5 ft.
Landing gear type fixed, conventional
Tire size, mains 18x7-6
Tire size, nose or tailwheel Scott 2000
Seats & configuration 1

Engine:

Continental O-200, 100 hp; 90 to 118 hp usable.

Weights and Loadings:

Gross weight 900 lb.
Empty weight 593 lb.
Useful load 306 lb.

Calculated Data:

Wing loading 7.3 lb./sq. ft.
Power loading 9 lb./hp
Payload, full fuel & oil 234 lb.

Propeller:

Fixed McCauley, 70-inch diameter, 50-inch pitch.

Performance:

Maximum speed, sea level 112 mph
Cruise speed 100 mph
Range 207 s.m.
Rate of climb, sea level 1850 fpm
Service ceiling 17,000
Stall speed 44 mph
Takeoff ground roll 350 ft.
Landing ground roll 550 ft.

Manufacturer:

Skyote Aeromarine Ltd.
P.O. Box 808
Clark, CO 80428
303/879-3823

Source of information:

Skyote Aeromarine, Ltd.

Other notes or comments:

Performance figures based on Continental O-200, 100 hp.

Designer Pete Bartoe's Skyote leads Duane Bartlett's biplane. The Bartlett Skyote was the first to fly.

also contain small machined spacers which require use of a lathe. The wing structure is hard-riveted and covered with hand-sewn fabric. Fabric-covered aluminum, torque-tube-actuated ailerons are fitted to all four wing panels. Wings are braced by two outboard parallel interplane struts and two pairs of center-section (cabane) struts, plus conventional internal wing torsion and compression bracing. The wings, which use a modified NACA (1.8)412 airfoil, are swept back 7.2° at 25% chord and have no anhedral or dihedral. Incidence is 2°.

Bartoe notes that the fuselage requires slightly more work than some



other aircraft designs because of the Skyote's small bays, stepped longerons and boxed-in wing fittings. Basically, the fuselage is a truss structure of welded 4130N chrome-molybdenum steel tubing with wood formers, wood turtleback and fabric covering. Tail surfaces are fabric-covered 4130 steel tubular structures with wire bracing. The stabilizer incorporates ground-adjustable incidence but no trim tabs are fitted to the elevators.

The tail-dragger-configured airplane mounts 18 x 7-6 Cleveland wheels and hydraulic disc brakes on welded-steel V-legs and half axles, with bungee cords for shock absorbers. The steerable tailwheel is a J-3 Cub assembly and a Scott 2000 wheel. Landing-gear tread is 4 feet; wheelbase 12 feet, 6 inches.

The Skyote was designed to accommodate Continental C-85, C-90 and

O-200 engines, plus the Lycoming O-235 of 118 hp. Fuel is carried in two 6½-gallon tanks, one in the upper-wing center section, the other in the fuselage aft of the firewall.

To date, Bartoe has released 56 sets of construction drawings. These are professional prints that were to be used in the Skyote FAA certification program. Two sets have gone to Canadian builders and one to Hawaii. Bartoe ceased sales of plans in Spring of 1986, because of the product-liability problem and the cost of maintaining an inventory of wing and rib kits. Bartoe says he'll sell the prefab kits (complete prefab wing kit and aluminum rib kit are available for \$3100 and \$2200, respectively) to customers who've bought plans, and that when and if he restarts the sale of Skyote drawings, he might require kit buyers to make their

purchase when buying the plans—maintaining inventory for two or three years between plans purchase and wing kit purchase is expensive. The drawings were priced at \$275, and the info pack at \$2.

Seven Skyotes are currently flying, four of which employ the original Davenport-Bartoe welded fuselages. The original prototype has been acquired by a Navy physician. The plane has logged more than 500 hours. The other three flying Skyotes are custom built right down to the fuselages, although some did employ Bartoe-provided wing or rib kits. Eight additional Skyotes are said to be nearing completion. □

FOR MORE INFORMATION, contact Skyote Aeromarine Ltd., Box 808, Clark, CO 80428.