PILOT FLIGHT CHECK:

Cessna's CENTURION...

...A sophisticate in the speedy single set

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■■ Single-engine retractables—which one is the biggest seller? The beautiful Bonanza? The fuel miserly Mooney? The venerable Viking? The adept Arrow II?

Nope. None of these. It's the Cessna Centurion. Some may complain of its high wings, gawkily retracting landing gear and boxy cabin. Yet the Centurion, available standard or turbocharged, was snatched up by 531 buyers last year. This compared to sales of 420 Piper Arrow IIs and 397 Beech Bonanzas. (The numbers come from the General Aviation Manufacturers Assn.)

The airplane has been around since 1959, and like most Cessnas, it has had its share of changes. And over the years, it has helped create, and has taken a big share of, a market for heavy-load retractable singles. Piper, this year, jumped into that market with its new Lance.

With only one engine, the six-seat Centurion will never be able to satisfy the flier who likes to have a spare powerplant on hand when in clouds, over mountains, or flying at night. It also has no throttle quadrant to gratify the pilot with a "fistful of throttles" complex. But when cabin size, speed, fuel consumption and maintenance costs are taken into account, the 210 appears to be a thrifty competitor to most light twins as well as singles.

But the bargain ends for some at the beginning. For the purchase price of a Cessna Centurion can nudge six figures. It may come cheaper than a Bonanza, but the two airplanes are both playing for high stakes.

Recently, I evaluated a 1976 Cessna Centurion, elaborately, no, lavishly loaded with Cessna avionics. Equipped price for the airplane was $92,557.50. The plane was built to show off the full line of Cessna avionics. Everything the company offered in its midrange line (the 400 series) was in this airplane—including an integrated flight control system (a combined autopilot and flight director). This 210 was a demonstrator being used by Johnny Antoon, Cessna's East Coast avionics sales engineer.

Installed, also, were two of Cessna Avionics' (manufactured by Cessna's Aircraft Radio and Control Division, ARC) newest offerings—their own distance measuring and area navigation systems.

The plane was a Centurion II (the "II" package adds gyros, basic IFR radios, and various interior and exterior accessories), with "Nav Pac" (another option package that provides a second nav/com, glideslope receiver and marker beacon). The Centurion costs $55,950, the Centurion II costs $63,650, and the Centurion II with Nav Pac comes to $66,600. Turbocharging adds $6,000 to the price of each model.

Normally aspirated Centurions, like N2110S, the flight-check craft, are pulled along by Continental IO-520 powerplants, continuous-rated at 285-horsepower. A three-blade prop, standard, hangs on the nose.

Several years of continuing efforts to clean up the airflow over the plane are in evidence in published speeds for the 210. Top speed for this year's nonturbo Centurion is put at 202 mph. The turbocharged model has a top speed of 236 and cruises at 233, Cessna reports. The speeds are up several mph over last year.

Even without the blower, the 210 has a reported service ceiling of 15,500, reflective of the aircraft's relatively moderate power loading—12.7 pounds per horsepower.

Other changes on the latest Centurion include use of bonding fabrication techniques on wing leading edges and the baggage door. (Bonding is a process for gluing aluminum to the aircraft structure, eliminating rivets and reducing the number of seams.) Flush riveting is found on the wing, offering reduced drag.

More improvements noted by Cessna include several of a technical variety—all-electric instruments and fuel gauges (eliminating any wet lines in the cockpit); landing gear system changes to "insure proper sequencing of the gear and gear doors;" and a new type nose gear bushing for "greater strength and reliability, better function and reduced maintenance."

N2110S featured an all-leather interior ($325 extra), a particularly pleasant change from the vinyl and fabric that surrounds us so often in conveyances. Whether leather upholstery is particularly utilitarian can certainly be debated, but it was a beautiful interior to behold.

Walkaround inspection of the craft reveals a few novelties; the right top-half of the cowl is quickly removable for routine maintenance, a change from last year; antennas are minimally in evidence, since they are "flush mounted." The glideslope antenna is hidden in the leading edge of the starboard wing, marker beacon in the bottom of the tail cone, ADF loop antenna flush to the belly, and two communications antennas are on the leading edge of the vertical stabilizer. Only the flush com antennas come as an option ($210). The rest are standard installations with Cessna avionics.

Walkaround also reveals one of the high-wing airplane's biggest banes—fuel-filler holes and caps that are both out of sight and out of reach without the aid of a ladder. Each of the two wing tanks is equipped with a quick drain, and there's another drain in the engine compartment. A fuel sampler cup is included.

Preflight, moreover, will pinpoint an ice detector light (a $52.50 option) mounted on the top left part of the cowl to spotlight any ice building on the port wing leading edge.

Boarding the craft is, for the pilot, a task. Two doors, one on each side of the cabin, yawn open (no struts stop the door from swinging wide). But steps mounted on each main gear leg are set too far back to be of much use for ingress and egress from the front cabin. Another step, which folds out from under the door, is added on the passenger side. And even when front seats are slid all the way back, there is barely room

Three-blade prop is standard on the Centurion. Photos by the author.

to swing a foot between the corner of the seat and front-door post.

Once settled in, however, there is ample room in the front and center seats but a little less knee room in the back row (a bench seat with folding back). The back seat is rated for two full-size airplane occupants (170 pounds).

The pilot seat has vertical adjusting capability, standard; and front and center seats can be moved fore and aft. These four seats also have an adjustable seat-back angle. Front armrests (optional, $125 for two) fit into a slot on the inboard edge of each seat. I found this aid nice in flight, but in conflict with my right elbow while operating power and other controls during takeoff and landing sequences.

During the two days the craft was flown, temperatures in the Washington, D.C., area hovered on either side of the freezing mark. Weather included heavy rain, at times, and lots of moisture.

But never once was starting the Centurion's engine a problem. Though it is fuel injected, it started effortlessly whether on an icy morning, or within minutes of shutdown after a long period of continuous flying. An electric fuel-boost pump allows you to quickly build up fuel pressure by opening then closing the throttle with the pump on. Fuel flow is shown on a gauge. When the proper rate is attained, it's throttle back, pump off, and start. Quick and simple, and it worked every time.

The 210 has a 28-volt electrical system, adding impetus to the starter motor of a congealed engine on a cold morning. An engine priming system is optional, $145, and was installed on N2110S.

In flight, fairly heavy elevator forces define the "feel" of the plane, although Cessna says that on new models the elevator system "pull brackets" were redesigned to "reduce elevator friction by 10 pounds." Aileron control felt considerably lighter, though handling of the plane was not unlike other of Cessna's heavier singles. Electric trim on the aircraft reduced the need for muscle-power, however.

Gear cycling had little effect on the Centurion's pitch. But flaps down demanded considerable nose-down trim to keep the plane in place. Landing gear, when it comes up, both rotates and folds, a somewhat lengthy process compared to other landing gear cycles. Gear up took about seven seconds, while gear down was a nine-second process.

continued

With both gear and flaps out, the 210 hung in the air at 40 kt indicated (primary indications on the airspeed dial for all '76 Cessnas are in knots), carrying some power. Though the stall warning was blaring, the craft was fully controllable. Stall and gear tones sound through the craft's audio speaker. Stall in that configuration came at 35 kt, indicated. With no power, a stall, gear and flaps down, registered at 50 indicated. In all stalls the wings stayed level. If the plane was held in the power-off stall, it would begin to show substantial pitch oscillations after a bit of initial buffeting. Nose down and addition of power made for a quick and stable recovery.

In clean configuration, power off, the stall horn came at 70 kt, followed by an extremely gentle stall at 64. Holding the craft in a stall configuration, it mushed, wings level and nose up, toward the ground at about 1,200 fpm. As the craft settled 1,000 feet in this manner, it showed only gentle buffeting, and ailerons still permitted some roll control.

N2110S had an empty weight of 2,413 pounds and a maximum allowable gross weight of 3,800. This left a useful load of 1,387 despite installation of some heavy options, including a 42-pound flight control system and a 58-pound oxygen system. Even with its load of options, the craft was a solid six-placer. To get to gross weight, you could top it to its 89-gallon fuel capacity and seat six passengers who averaged 142 pounds each. Or you could seat six official 170-pound airplane passengers and carry 61 gallons of fuel (giving range of close to 700 nm at fairly high power settings).

My flights in the craft were with par-

CESSNA 210 CENTURION
(normally aspirated)

Specifications

Engine	Continental IO-520-L
Propeller	McCauley, 3-blade, 80-in diameter, constant-speed
Gross weight	3,800 lb
Empty weight	2,170 lb
Wing span	36 ft 9 in
Wing area	175 sq ft
Wing loading	21.7 lb/sq ft
Length	28 ft 3 in
Height	9 ft 8 in
Baggage capacity	240 lb
Fuel capacity (usable)	89 gal
Oil capacity	10 qt

Performance

Max speed	175 kt
Cruise speed, 75% power	171 kt
Stall speed, flaps down	56 kt
Range (45-min reserve)	
75% power	855 nm, 5.1 hr
maximum range	1,060 nm, 7.8 hr
Takeoff:	
Ground roll	1,250 ft
Over 50-ft obstacle	2,030 ft
Landing:	
Ground roll	765 ft
Over 50-ft obstacle	1,500 ft
Rate of climb	860 fpm
Service ceiling	15,500 ft
Base price	$55,950

Installed on the craft were an integrated flight director and autopilot, DME and RNAV. Heavily padded yokes blocked vision of parts of the panel.

tial fuel and two light people and no baggage to speak of. The aircraft was anywhere from 600 to 900 pounds under maximium gross at all times.

Such a weight advantage allows faster speeds and climbs when compared to those published in the pilot's operating handbook, where performance is generally measured with the plane at maximum gross. (The handbook, a 7- by 9-inch binder, conforms to the manufacturers association's new standards and is extremely complete and very functionally organized.)

For a climb performance check, we departed Frederick, Md., Municipal, 304 feet above sea level, and went straight to 10,000 feet. Temperature at the surface was around 40° F, and at 10,000 feet it was 10°. Gear up immediately, throttle 25 inches mp, prop at 2,700 rpm, and an initial climb speed of 90 to 93 kt, registered a steady 1,300 fpm on the vertical speed indicator. Almost exactly 10 minutes later we leveled at 10,000, recording an average rate of 970 fpm. At the top the Centurion was still plugging upward at 700 fpm and producing 20 inches mp.

At 9,500 feet, the max cruise-power setting in the book is listed at 65%, 20 inches mp and 2,550 rpm. In flight we duplicated those settings and found the craft whizzing along at 149 kt indicated, or about 170 kts true airspeed (196 mph). Power reductions at our weight and altitude created little drop in speed. In fact, pulling back power to 20 inches and 2,200 rpm, though it

Main gear rotates during cycling process, and gear doors stay closed at all other times.

reduced power to about 51%, caused only a 2-kt drop in indicated airspeed. Repeated checks of speeds at this altitude verified the relatively small effect of varying power settings.

Down at lower altitudes, 23 inches and 2,300 rpm at 3,500 feet produced about 61% power and put the airspeed needle on 150 kt. Conversion to true airspeed gives a speed of 156 kt (180 mph), a couple of knots faster than the published speed. And at 4,500 feet pulling 75% power, 24 inches mp and 2,550 rpm, the craft trued out at 177 kt or about 204 mph. Fuel consumption here showed 105 lb/hr (17.5 gph). Up at altitude, at 50% power, the engine was drinking 13.6 gph.

All fuel figuring—from filling the tanks to measuring fuel flow—is done in pounds, as far as the Centurion is concerned. Maximum fuel load for the aircraft is 534 pounds, and the fuel gauges show numbers in pounds of fuel remaining. Gallons are there, but in pale blue lettering on the upper part of the gauge and not particularly legible in most instances. Working with pounds of fuel instead of gallons takes a bit of mental readjustment but is certainly not difficult.

Noise levels were low, and vibration was minimal—both a partial result of the three-blade propeller. Also, rear-cabin windows are double-thickness plastic. Visibility out the front of the craft was generally excellent in flight, though on the ground the nose hid a good bit of the roadway immediately in front of the craft. The pilot sits well behind the leading edge of the wing, and thus visibility to the side and up is totally blocked—but of course, visibility down is unlimited.

Rudder pedals were generally quite steerable except for in very tight turns. The nosewheel is small (5.00-5), and there is a lot of weight right on top of it. After the nose tire was turned fully in one direction, it would take heavy opposite rudder plus opposite brake to bring a slow straightening.

Despite the Centurion's horsepower, torque effects on takeoff are minimal. The airplane will pull a bit to the left but is easily kept on centerline. Either none or 10 degrees of flaps is suggested for takeoff. Ten degrees would get the wheels off a little more positively at a rotation speed of about 65 kt. A normal takeoff with light winds had the plane off the ground after about an 800-foot run at Montgomery County Airpark (elevation 540 msl).

For landings, the 210 seems totally at the will of the pilot. As it turned out, I made one of the smoothest landings I've made and also one of the bounciest ever, in this aircraft. On a day with west-northwest winds gusting to 25 kt, a full flaps normal landing (85-kt approach speed) would have the 210 stopped after a roll of about 700 feet. A short-field landing, carrying enough power to drag the plane over the fence at between 60 and 70, got it down and halted after about 200 feet of hard braking—with the help of a direct headwind.

At another airport, where the runway in use had 30 kt of wind blowing from 60 degrees left, the Centurion approached the centerline nicely, though by touchdown almost full cross-control was necessary to keep the aircraft lined up. On rollout we blew a bit to the right of the white dashes.

The Centurion as equipped was a complex machine. Scores of mini-switches, rocker switches, pushbuttons, rheostats, and knobs were available to run the mass of mechanical and electrical wizardry. On the pilot's yoke alone, there were seven separate switches and buttons. The yoke is a large, heavily padded affair that blocks sight of most of the craft's electrical switches—a particularly annoying bit of design.

Also, there is a certain randomness to placement of some of the aircraft's switches. You'll find light switches in at least six different places inside the cabin. You'll find circuit breakers stashed down at the bottom of the pedestal between the front seats as well as in a row at the base of the instrument panel. You'll find a cigarette lighter and a knob that stows the copilot's rudder pedals in among the heater and vent controls near the right yoke.

The right side of the panel, too, has a miscellany of design. It features a dual-headed ADF; engine power, suction, gyro-slaving gauges; hobbs meter; and a spare altimeter—all kind of stuck in holes wherever space was available, it seemed. (An electric-powered encoding altimeter is placed before the pilot, and for IFR certification a standard pressure altimeter is a required backup.)

All the avionics worked well. Radio clarity was particularly good, and the RNAV pinpointed a no-navaid field to within a tenth of a mile. The integrated flight control system (an $11,655 option) was given a chance to keep up its IFR currency by shooting an ILS approach at Dulles International. And as these things tend to do, it embarrassed me with the preciseness of its tracking ability—on both the localizer and glideslope paths. All I did was talk on the mike, tune in the radios, pull back the throttle, lower the gear and flare the airplane.

This is not the airplane in which you would want to go blithely off on an IFR trip. Five or 10 hours of familiarization with the panel design and operation of the aircraft's features would be essential for the new Centurion flier. It's a sophisticated piece of machinery with tremendous operating capabilities. □