



Pilot Flight Check: Rockwell Commander 700

The pressurized twin boasts an 8,000-foot cabin at 25,000 feet and a top speed of 221 knots. (Rockwell photo)

by ROGER ROZELLE / AOPA 537321

■ ■ Rockwell International's newest addition to its stable of aircraft is a sleek, 221-knot (254-mph), piston-powered twin that turned out an impressive performance during a recent flight check by the PILOT.

The aircraft, Rockwell's Commander 700, was an original concept by Fuji Heavy Industries, which wanted to enter the general aviation marketplace.

Rockwell's General Aviation Division Oklahoma (GADO) saw the opportunity to bolster the lower end of its multi-engine herd and joined forces with the company.

Marketing was planned as a joint venture, with Fuji being accountable for sales and support in the Far East and Australia, while Rockwell covers the remainder of the world market.

The airplane is built in various sub-assemblies. Those various parts, including the wings, fuselage, and other structures are shipped from Fuji to Bethany, Okla., where they are mated to form a complete airplane. In addition, U.S.-manufactured avionics, engines, interiors, and system components are installed.

Rockwell, in turn, ships U.S.-manufactured items to Fuji for installation in aircraft for sale in its marketing area.

The aircraft flown during the PILOT flight check was a prototype version that had been configured to the production model. It still carried a few rough spots left over from its engineering evaluation days, including some additional weight from test equipment installations. The flight was conducted from Rockwell's facility at Wiley Post Airport (elev. 1,300 feet) in Bethany, Okla.,

as the area was recovering from its worst winter weather in five years, according to local newspapers. This particular morning the temperature was 24°F in blowing snow.

The Commander 700, the culmination of three years of labor, is an impressive-looking craft, with smooth and graceful lines. Its long nose extends several feet beyond the curved panoramic windshield and the horizontal stabilizer is mounted mid-tail. The engine nacelles slope back across the low wing housing the Lycoming 340-hp turbocharged engines and over the Fowler flaps. Anyone looking for baggage lockers inside those elongated structures can forget it. The aft section of the left nacelle houses the battery and the rear of the right nacelle contains the optional 16,000-BTU air conditioner, tagged at \$5,475.

The surface of the engineering air-

Joint venture, pressurized twin boasts "wide body" interior



craft was especially distinctive. Rivet heads were neatly aligned and even; the forward skin was smooth, utilizing bonding and flush riveting.

Entry to the cabin is by way of an airstair door. Suspended by two steel cables, the door required a bit of manipulation to get it down gently. A hydraulic door assist is optional; anyone who can pay the \$257,500 suggested basic list price for this kind of machine should be able to afford the \$835 for the optional door assist. In fact, anyone paying that price might be entitled to it anyway.

The cabin is spacious—16 feet 5 inches from the aft bulkhead to the instrument panel—and nearly 57 inches high and less than an inch short of being just as wide. The definite feeling of roominess was enhanced by four large windows on the right side and three more on the left, forward of the cabin door.

The aft section of the cabin is set aside as a baggage area capable of handling 400 pounds. Another compartment is reached through a locker in the nose and can be loaded with up to 300 pounds. Plans are already underway to enlarge the nose baggage area.

The interior of the 700 flown by PILOT was a bit plain looking, a standard package called "Voyageur." An optional package including two folding tables, refreshment center, headrests, lavatory seat, and some other items is available at an additional \$9,975.

Four seats aft of the cockpit were mounted on continuous flush tracks on the flat cabin floor. They provided plenty of leg room, but I found myself uncomfortably close to the cabin side when seated in the passenger chairs. It was a bit disconcerting, with what seemed to be a generous aisle space. There was more than adequate headroom.

Moving into the cockpit area was accomplished fairly easily, with some slight contortions required in negotiating the center-mounted pedestal housing the autopilot and trim controls. The

ROCKWELL COMMANDER

Basic price \$257,500

Specifications

Engines (2)	Avco Lycoming T10-540-R2AD each 340 hp @ 2,500 rpm
Propellers (2)	Hartzell, constant speed, three blade
Wing Span	42 ft 5 in
Length	38 ft 2 in
Height	13 ft 4 in
Wing area	200 sq ft
Wing loading	33.75 lb/sq ft
Passengers and crew	6
Cabin length	16 ft 5 in
Cabin width	4 ft 8 in
Cabin height	4 ft 9 in
Empty weight	4,620 lb
Maximum zero fuel weight	6,750 lb
Maximum ramp weight	6,790 lb
Useful load	2,130 lb
Power loading	9.9 lb/hp
Fuel capacity (standard)	210 gal (208 usable)
Oil capacity	12 qt/engine
Baggage capacity	700 lb (53 cu ft)

Performance

Takeoff distance (ground roll)	1,700 ft
Takeoff over 50 ft	2,170 ft
Rate of climb	1,633 fpm
Single-engine rate of climb	199 fpm
Maximum level speed	221 kt (254 mph)
Maximum range cruise (with 45-min reserve)	1,040 nm (1,196 sm)
Service ceiling	30,000 ft
Single-engine service ceiling	12,000 ft
Stall speed—C.A.S. (clean)	85 kt (98 mph)
Stall speed—C.A.S. (gear and flaps down)	67 kt (77 mph)
Landing over 50 ft	2,155 ft



The cabin baggage area aft of the airstair door can handle 400 pounds of cargo. The wind-tunnel-tested engine nacelle slopes downward across the Fowler flap for low drag and high speed. Photos by the author except as noted.



The nose baggage compartment has a single access and, though small in volume, can handle up to 200 pounds.

ROCKWELL COMMANDER 700 continued

cockpit floor was raised slightly higher than the passenger compartment floor. The wing spar, constructed of one single piece of forged steel, was mounted inconspicuously under the floor.

There was plenty of leg room in the left seat and most controls were easily reached from that position. One exception was a circuit breaker panel on the lower cabin side just forward of the right seat. A similar panel on the left side incorporated the primary array of circuit breakers in addition to some system switches including the deicers, dual alternators, battery master, and radio master. They were slightly inconvenient to operate, requiring some shifting of legs and head tilting. Their location made some of them subject to accidental switching by movement of my left leg.

Switches. For the pilot who feels that lots of switches in the cockpit promote an air of greater control, this 700 was his wish come true. There were plenty of them in a variety of sizes, shapes and colors. Production models will have a more uniform configuration of the controls.

A Collins Microline radio package filled the panel at \$58,580, including an AP-107/FD-106 autopilot flight director system that was disconnected since certification testing had not been completed. Similar packages sporting King Silver Crown at \$51,255 or Narco Centerline at \$53,575, are also available.

Forward visibility from the flight deck was very good, although some neck cran-

ing would be necessary to get a better peek at high frontal traffic. The view from the pilot's side window was superb. Its counterpart on the right side provided good visibility, even with a person occupying the seat.

This particular aircraft was estimated to be 125 to 150 pounds heavier than the production models due to engineering test equipment still on board the airplane. Even so, with two heavy men and 150 gallons of fuel, the aircraft weighed in at 6,600 pounds, not far from its maximum ramp weight of 6,790 pounds.

Starting was uncomplicated and the cockpit was strangely quiet, even with both engines turning. Taxiing was straightforward, with the nosewheel steering connected to the rudder pedals. The aircraft was responsive and required no differential braking.

The takeoff checklist called for opening the engine cowl flaps, located on the top side of the engine nacelles. Flaps were required and the 12 degrees called for were selected by setting the wing flaps control to "takeoff." The electrically controlled Fowler flaps took 16 seconds to travel to the takeoff position from a fully retracted configuration.

An additional 16 seconds would be required to further lower the flaps to 38 degrees, selected by changing the flap switch to "landing."

Easing the throttles forward, the aircraft was rotated at 90 knots, safe single-engine speed (V_{SSE}), and began climbing rapidly at 44 inches manifold pressure and 2,500 rpm. Once a positive climb was established, up came the forward-retracting gear, requiring about six seconds to cycle. The flaps came up

next. With the power setting reduced to 39 inches and 2,400 rpm, the aircraft maintained 120 knots and a 1,000-fpm climb all the way to 16,000 feet.

Marginal weather dictated an IFR flight, and following the controller's directions was a snap. The controls were sensitive and tight. The machine responded swiftly and smoothly, requiring only fingertip pressures and very small trim adjustments.

Leveling off several thousand feet above the overcast at 16,000 feet and maintaining the climb setting (75% power), the aircraft accelerated to 160 knots IAS (204 knots TAS) and the total fuel flow indicated 27 gph. The outside temperature was -19°C .

At 33 inches and 2,200 rpm (65% power) the IAS was 145 knots (185 knots TAS) and the fuel flow meter showed 18 gph.

After pulling the levers back to 28 inches and 2,200 rpm (55% power) the IAS was 133 knots (169 knots TAS) with a fuel flow of 15 gph.

Putting the aircraft in a landing configuration and reducing power to 20 inches on each engine didn't reveal any gremlins in a stall. There was a noticeable buffet at 60 knots, and the horn sounded close behind, with a clean, wings-level break at 50 knots, and recovery in approximately 300 feet.

Reducing power on the right engine to approximate zero thrust—20 inches and 2,000 rpm—and applying 39 inches and 2,400 rpm on the left one, we found the aircraft would hold level flight at 130 knots with very little rudder correction at 16,000 feet. That isn't bad for an airplane with a single-engine service

ceiling that's quoted at 12,000 feet.

Settling on 55% power, we maintained a 500-fpm descent at 160 knots IAS during the return to Wiley Post Airport. Reducing speed to 155 knots and lowering the gear required very little trim correction for hands-off flying; otherwise it didn't need to be worried about.

Closer to the airport, the aircraft was slowed to 130 knots and 12 degrees of flaps were deployed. Again, very little trim correction was necessary. Downwind was flown at 120 knots with the final approach flown with full flaps at 110 knots into a 20-knot, gusting headwind. Touchdown came at 85 knots.

Determining the landing rollout was difficult since visual references were obscured by an accumulation of heavy snow, but it seemed to be within reasonable limits, with light braking due to snow on the runway.

Final performance figures were still being compiled, but from the flight it appeared that the latest Commander will meet or exceed its published performance data.

Rockwell seems satisfied that it has a progressive future with the 700 design, and a derivative of it, the Model 710, is undergoing flight testing in Japan with 450-hp Lycomings. Enlargement of the cabin was included in the future of the 700 series by designing a 36-inch plug to fit aft of the wing and forward of the door to extend the cabin.

One aspect of increased support of its products will be a comprehensive Rockwell warranty program. Dealers will be allowed a three-month warranty, distinct from the nine-month customer warranty. That means a customer will be able to buy a new 700 demonstrator with no reduction in the warranty—assuming that the dealer moves it within three months.

Another support program is called "Flight Pay." Each of the first 25 retail buyers of the 700 line will be given certificates valued at \$10 per flight hour. The certificates, paid out up to 12 months or 300 flight hours after purchase, whichever comes first, could be worth \$3,000.

The 700 was built to the latest specifications set forth in the U.S. Federal Aviation Regulations, Part 23 through amendment 14.

"We see the 700 Commander and the 710 adding to our line below the price and performance of the 690B, opening new markets for our distributors," said Cornell J. Slivinsky, Rockwell's GADO president.

The first customer delivery of a production Rockwell 700 is scheduled for next month. □



Seats are mounted on flush tracks and optional seating arrangements will be available for the roomy cabin.



Collins avionics fill the panel, one of three radio package options available from the factory.