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A SPECIAL SECTION FOR THE TURBINE OWNER-PILOT



Sky truck

Cessna's Caravan, the multitasking airborne pickup

BY THOMAS A. HORNE



With some 1,800 airplanes delivered since its debut in 1985, Cessna's Caravan ranks as an icon among utilitarian singles. It's a massive Pratt & Whitney-powered 675-shp turboprop that stands tall on the ramp, has a maximum payload of some 3,000 pounds, a huge unpressurized cabin, and yet behaves surprisingly like a Cessna Skyhawk. FedEx validated the Caravan concept when it bought 200 airplanes, beginning with early-model CE-208 Caravans—the 208A "Cargomaster" variants with 600-shp engines, no windows, and a 37-foot, seven-inch-long fuselage. In 1988, the CE-208B replaced the original versions; it came with a four-foot fuselage stretch and more power from a 675-shp Pratt & Whitney Canada PT6A-114A engine. FedEx, needing more cabin volume, bought more windowless Caravans dubbed "Supercargomasters." But

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know: There's a trend-monitoring system that keeps track of exceedances in torque, temperature, and other engine and system-wide parameters.

After three instrument approaches and some airwork I began to get more comfortable in the (huge) cockpit. Two ILS approaches in low IFR weather (300-foot ceiling, one-half-mile visibility in blowing snow) proved the wisdom of the 10-11-12 rule, and also showed off the simulator's excellent bag of very convincing, high-resolution visual tricks.

On a missed approach, another G1000 upgrade proved extremely helpful. The new version flies the entire missed approach procedure—complete with holding pattern. Simply hit the power lever's go-around button. This automatically pitches up the command bars, disconnects the autopilot (if you were using it), unsuspends GPS nav sequencing, and switches the CDI (course deviation indicator) to GPS mode. Then all you do is hit NAV on the autopilot panel, and the system will fly the whole missed approach procedure (but you're still in charge of preselecting the appropriate altitudes). By the way, Garmin prohibits raw-data ILS approaches below 400 feet agl; the flight director must be used in these situations.

Through its paces

Approaching the Caravan, your first thought might center on how to enter the cockpit. It's a big step up, and for that purpose a two-piece, sliding ladder is unfolded from the door sill. Once inside the cockpit, you'll see a large, handy door pocket where you can store checklists and manuals. The yoke is attached to a floor-mounted control column—a feature some believe essential to a “big airplane” identity.

Starting is PT6-simple. Fuel boost pump On, hit the starter, wait for 12-percent N_G (gas generator speed), then move the red condition lever to the Low Idle position. Disengage the starter at 52-percent N_G . Monitor oil pressure and fuel flow for normal indications, and then it's pretty much time to taxi.

Caravan panels now come with Garmin's G1000 avionics. Unlike the G1000s in piston airplanes, the GFC 700 autopilot controls are mounted in a separate panel, above the multifunction display. FlightSafety International's Level D simulator (opposite page, top) has top-of-the-line visual effects.

Our cargo pod- and TKS-equipped airplane—serial number 2002—weighed 8,646 pounds (104 pounds short of max takeoff weight), with myself, Cessna demonstration pilot Jim Oliver, plus two passengers and full fuel. That meant a fair amount of breakaway power to get the ship taxiing.

I'd seen normal takeoffs in the simulator, so we did a short-field takeoff for our departure out of Wichita. For this, it's 20 degrees of flaps, stand on the brakes, power up to just short of torque redline (torque will increase as speed builds during the takeoff run), release the brakes, rotate at 70 KIAS, and climb out at 83 KIAS. The Caravan levitated

off the runway, so clearing the mythical 50-foot obstacle in short order posed no problem. Our rate of climb settled at 850 fpm, then dropped to 700 fpm as the nose was lowered for better visibility at the en route climb speed of 110 KIAS.

Airwork revealed the Caravan's somewhat ponderous aileron forces, in spite of the spoileron-plus-aileron roll control. That big rudder also calls for some attention, what with all the torque from the 675 horses. I found myself retrimming quite a bit after each configuration change. Steep turns were easy, thanks to the G1000's flight director command bars. Engage altitude hold mode on the autopilot controller, then just keep the



nose of the symbolic airplane tucked into the apex of the command bars.

Stalls were docile enough, with plenty of warning. One full stall was preceded by gobs of stall horn noise and a lot of buffeting, and ended with a moderate, straight-ahead break.

At 6,000 feet I set up cruise power using 1,750 propeller rpm. To set maximum torque, you advance power until the torquemeter needle nestles in a blue bug. At an OAT of plus-5 Celsius and a 1,750 propeller rpm we were well below the ITT redline of 740 degrees, burning 389 pph/58 gph of Jet-A, and truing out at 165 KTAS. Indicated airspeed was 153 KIAS. So the Caravan is no speed demon;



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speed was traded away by all those struts and a large frontal profile. You hear about Caravans cruising at 180 KTAS, but that's for airplanes without the belly-mounted cargo pod installed, and under optimal conditions. That pod costs about 10 knots in cruise speed, which, along with the reduced rpm, accounted for our slower cruise.

What happens if the engine quits? Oliver simulated this by having me reduce the power to flight idle while he pulled the prop lever to the Feather position. As soon as the prop feathered, the airplane surged forward as drag reduction kicked in. Now the job is to maintain the best glide speed of 95 KIAS, and start looking for a place to land. Surprisingly, Cessna says, the Caravan's glide ratio (1:14) is better than the Skyhawk's (1:9).

The real fun happens during landings. You can use power to quickly capture any climb or descent rate or angle you like. Retard the power below 500 foot/pounds and the prop blades flatten out, making for a giant, drag-producing disc. Do it abruptly and you'll surge forward, pressing against your straps as the Caravan decelerates. By adjusting power this way, you watch the terrain rise and fall as you nail the touchdown zone in your sights. Normal landings are performed with full flaps (30 degrees of deflection), flying at 75 to 85 KIAS; for short field landings, fly at 78 KIAS until over the threshold. Be careful not to go to flight idle until you're about to touch down. If you don't, a hard landing awaits.

TKS, pod, executive, and other options

From 1987 to 2005 there were 41 Caravan accidents linked to icing. In many cases, this was more of a pilot problem than an icing problem. For example, 10 accidents were blamed on pilots taking off with ice or frost on the wings. Still, the airplane drew the FAA's and NTSB's interest on what was perceived as a Caravan icing issue. As a result, several icing-related safety recommendations and airworthiness directives (ADs) came out over the years.

One, AD 2006-06-11, requires an assist handle so pilots can inspect the upper surface of the wings for frost, snow, and ice during the preflight. Another, AD 2007-10-15, requires an illuminated warning light that automatically comes on when the airspeed drops below the airplane's minimum icing speed. In older

airplanes with pneumatic deice boots, this speed is 105 KIAS. In the new, TKS-equipped option, that speed is 110 KIAS with flaps up, and 95 KIAS with full flaps. Recommended approach speed with ice accumulations is 120 KIAS, with flaps extended no more than 20 degrees.

The cargo pod (\$60,375), another popular option, can carry up to 1,090 pounds in its 111.5 cubic feet. It's divided into four compartments, and the 11.7-gallon TKS fluid tank is installed between the second and third compartments. For those wanting TKS and no cargo pod, Cessna is developing a TKS fluid tank that will be incorporated into a new main landing gear fairing.

The plush, seven-place executive interior (\$176,015 to \$209,600, depending on materials), is installed in Wichita at Yingling Aviation (www.yinglingaviation.com). It features leather seating, slide-out tables, cup holders, and even an aft lavatory. Want an executive shuttle for short hops? This is your airplane. Cessna uses an Oasis-version Caravan to shuttle employees between the Wichita headquarters and its factory in Independence, Kansas.

Amphibious floats are yet another big option, especially for owner/operators in Alaska and other backcountry areas. Wipline (www.wipaire.com) is perhaps the biggest STC holder for Caravan float conversions, which run approximately \$208,000 (straight floats) to \$294,200 (amphibious floats)—plus installation.

Simple, easy to fly, well supported, and capable to the max, the Caravan's future seems assured. And although it may have an angular, retro look compared to other turboprop singles—the Pilatus PC-12 and the Socata TBM 700 and 850 come to mind—it doesn't hurt that a new Caravan is some \$1 million less than this speedier, flashier competition.

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E-mail the author at tom.horne@aopa.org.

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Fly along with Editor at Large Tom Horne as he puts the Cessna Caravan through its paces.

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