

Pilatus' Apex

A stately heavy hauler gets new glass

BY THOMAS A. HORNE

With sales nearing the 800 mark, the Pilatus PC-12 has been a standout in the single-engine turboprop market. Because the external features of the airplane remained largely unchanged during its 14-year production run, it can be tempting to believe that today's PC-12 is the same as those of yore. Wrong. In 2006, with the series-10 versions, the airplane had a 1,411-pound gross-weight increase that allowed operators to top off the tanks and fly six passengers 1,400 nm with IFR reserves. At the same time, roll response was boosted by the addition of servo tabs to the PC-12's ailerons, and many switches (ice protection, external lights, fuel pump, ignition, and starter) were moved from the lower instrument panel to the overhead panel. New Ipeco seats, with headrests, adjustable lumbar and thigh support, and deeper center cutouts (for greater ease in entering the cockpit) improved pilot comfort on longer trips.

Now there's the new PC-12NG. This is the most ambitious upgrade to the PC-12 ever, because it revolutionizes the instrument panel. The NG (for Next Generation) models use the much-awaited Honeywell Apex avionics suite—Honeywell's answer to the groundswell of Garmin G1000 popularity. After a false start two



years ago, Honeywell got the kinks out of the Apex software, and now Pilatus is the launch customer for the Apex. First deliveries of the NG airplanes—which begin with serial number 1001—have begun. So far, nine have been delivered, and Pilatus expects 73 more NG deliveries by year-end.

Joystick rules

The standard Apex panel has a single primary flight display (PFD) and two multifunction displays (MFDs). A second PFD is optional. The PFDs use the usual vertically oriented airspeed, altitude, and vertical speed tapes. What's unusual is the presentation of engine instrumentation, and navcom, ADF, and transponder frequency selectors within the PFD field. Most glass cockpits put this information on a separate display. The Apex gives you this critical data front and center.

The MFDs are unique, too, in that they require the use of a joystick to ac-

tivate cursor controls, navigate many menu fields, and select various inputs and functions. The joystick—a smallish stalk on the MFD keypad—is quite sensitive to even the smallest movements. It'll zoom this way and that as you make your first attempts at menu navigation.

The top MFD, with its INAV (integrated navigation) functions, gets a workout every time you fly. You use the aircraft-on-ground, in-climb, and in-descent icons to call up menus on the left side to set up and amend your flight plans, do your weight buildups, and display takeoff, cruise, and descent information. The first step, as always, is to move the joystick so as to position the target-style crosshairs on the appropriate icon, and then hit the "Enter" button on the FMS keypad. Up pops a menu of options, and from there it's move the crosshairs, hit Enter, then hit "Activate." You get the idea. There's a lot of crosshair moving, and it takes a while to get used to this method of data entry. Those with expe-

rience solely in line-select or trackball-style data entry will have to endure a learning curve. My demonstration pilot, Pilatus' Peter Duncan, claims to have mastered the Apex in just 10 minutes ("When I found the 'amend route' entry on the drop-down menu, I was over the hump," he said), but I think the average Joe Pilot will take a couple days—and maybe 20 hours of flying—before running the Apex becomes intuitive. Sim-Com's Orlando training facility now has an Apex-equipped simulator. The pilot initial training takes six days. Trainees get two Apex training CDs in advance, so they can practice Apex procedures on their personal computers.

It's worth pointing out that a lot of joystick commands aren't necessary. The crosshairs automatically jump to the next sequential entry point. For example, if you hit Enter with the takeoff icon selected, the crosshairs immediately jump to the runway and standard departure options, and the takeoff



The Apex displays include a primary flight display (PFD, left) with adjoining engine information and navcom tuning functions. A flight plan page on the MFD (below, left) is navigated with a joystick, and allows the pilot to select preflight, takeoff, and descent pages. The caution, warning, and system status displays (below) are at the left side of the lower multifunction display.



V-speed boxes automatically pop up. Enter the desired runway and SD, enter the V-speeds, and then the crosshairs jump to the Activate button. Hit Enter and you're finished with this phase of flight planning.

The Apex also lets you use the moving map display to rubberband a route around a storm cell, or amend instrument departure or arrival procedures. The map will also depict XM WX datalink weather and Stormscope returns and show terrain proximity via the ship's terrain avoidance and warning system (TAWS-B) system, and traffic can be selected to show up on both the MFD and PFD.

The bottom MFD has "focus fields" that issue cautions and warnings, show systems information for the landing gear, flap, and trim positions, plus data on the fuel, electrical, and pressurization systems. Jeppesen electronic charts, when certified for installation by year-end, will also be available.

More power, please

The Apex isn't all that's new with the PC-12NG. Thermodynamic engine power has been bumped up from 1,600 to 1,744 shp, but the new Pratt & Whitney PT6A-67P (the "P" is for Pilatus) retains the former engine's flat-rated takeoff power of 1,200 shp. This means a higher interturbine temperature (ITT) redline (820 degrees Celsius versus the previous 760 degrees), more protection against inadvertent redline excursions, and better hot-and-high performance. Pilatus also claims a higher max cruise speed of 280 knots. "But you can fly at 270 knots all day long," a Pilatus official said, implying that 280 knots might only be achievable under the most advantageous conditions.

At FL260 and ISA +2 degrees C, Duncan and I saw a max cruise fuel burn of 377 pph, or 56 gph. In exchange, we traded out at the predicted 270 knots. On the other hand, even with our par-

tial fuel load of 1,500 lbs/223 gallons we could fly for four more hours, covering some 972 nm. Of course, you could elect to fly at "combat cruise," meaning with power set for an ITT just below redline. This would get you a true airspeed of 284 knots while burning 411 pph/61 gph. That's at FL260, under these conditions, when time is of the essence.

The extra power also brought about a max takeoff weight increase. It's now 10,450 pounds, up from the previous model's 9,920 pounds. Payload with full fuel is up to 1,029 pounds. This means that a PC-12NG flying at FL300 can fly a pilot and three passengers 1,573 nm at max power—and land with NBAA IFR reserves. Virtually all PC-12s sold in the United States have the swanky six-place executive interior designed by BMW DesignWorks USA.

What you'd expect

The NG models have other thoughtful improvements. A major one is the



SPECSHEET

Pilatus PC-12NG

Average equipped price: \$4 million

Specifications

Powerplant.....Pratt & Whitney PT6A-67P,
1,200 shp
 Recommended TBO.....3,500 hours
 Wingspan.....53 ft 4 in
 Wing area277.8 sq ft
 Seats (Executive interior).....2+ 6
 Cabin length (excluding cockpit)..16 ft 11 in
 Cabin width.....5 ft
 Cabin height.....4 ft 10 in
 Basic operating weight.....(includes 200-lb
 pilot).....6,757 lb
 Max ramp weight.....10,495 lb
 Max takeoff weight.....10,450 lb
 Max payload.....2,283 lb
 Payload w/full fuel.....1,029 lb
 Max landing weight.....9,920 lb
 Fuel capacity.....2,704 lbs (402 gal)
 Baggage capacity, internal, aft
 compartment.....40 cu ft, 400 lb

Performance

Takeoff distance over 50-ft obstacle.....
2,650 ft
 Initial rate of climb.....1,920 fpm
 Cruise speed/range w/NBAA fuel rsvn (fuel
 consumption),30,000 ft

@ High-speed cruise power setting.....
269 kt/ 1,573 nm (349 pph/52 gph)
 Max operating altitude.....30,000 ft
 Cabin altitude @ 25,000 ft.....8,000 ft
 Landing distance over 50-ft obstacle (max
 landing weight, w/reverse).....1,830 ft

**Limiting and Recommended
 Airspeeds**

V_x (best angle of climb).....120 KIAS
 V_y (best rate of climb).....130 KIAS
 V_{LE} (max gear extended).....240 KIAS
 V_{LO} (max gear operating).....180 KIAS
 V_{MO} (max operating speed).....240 KIAS
 V_{S1} (stall, clean).....95 KIAS
 V_{SO} (stall, in landing configuration).. .66 KIAS

For more information, contact Pilatus Business Aircraft, Ltd.; Rocky Mountain Metropolitan Airport, 11755 Airport Way, Broomfield, Colorado 80021; 303-465-9099; www.pilatus-aircraft.com.

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

The six-seat, executive interior by BMWDesignWorks USA is by far the most popular choice among American customers. Here, an extra pair of seats are installed in the aft cabin area—right next to the massive aft cabin door.



addition of a second 300-ampere/hour generator. In earlier PC-12s, the number-one generator put out 300 amps, but the max output of the secondary, belt-driven generator was only 130 amps. This meant, among other things, that if you lost the main generator you'd have to leave icing conditions immediately. The secondary generator couldn't deliver enough power to heat the ice protection system. Having two 300-amp generators does away with this restriction, and provides redundancy for the Apex's current draw.

There are new "nice to have" features too, such as hotel and rental car information in the Apex's airport database,

footrests for the two aft cabin seats, and adjustable headrest bolsters.

But let there be no doubt: The Apex is the star of the show. As a derivative of Honeywell's big-iron Epic avionics suites, the Apex has room to grow, Pilatus says. If so, expect infrared (enhanced) and synthetic vision as future upgrades. For those whose idea of a "real" airplane includes an airstair door, a lavatory, and an overhead panel, this all adds up to what many believe is the ultimate turboprop single.

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