

# Pilatus PC-12 NG

## A New Spectre Haunts the Bad Guys

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Not content with accepting a job well done, Pilatus recently made the decision to radically improve the PC-12 Spectre model in order to keep the aircraft in its rightful place at the top. But why would the company change what was clearly a very successful aircraft? Did the Spectre need a host of enhancements? And what exactly is a PC-12 NG anyway? Finding the answers reveals an interesting story and a secret look inside a special mission aircraft manufacturer.

When it comes to special mission capability, it is hard to beat the PC-12 Spectre, because one acquisition provides for serious multi-role versatility. While its surveillance package identifies targets, its passenger and cargo capability can transport personnel and equipment cost effectively in pressurized comfort. Airborne command and control, search and rescue and incident response are all part of the PC-12 Spectre's reconfigurable design philosophy. The PC-12 Spectre also excels at air medical missions. Its pressurized 330 cubic feet cabin can accommodate up to three patients, in addition to life support equipment and medical personnel.

Pilatus' philosophy is that surveillance equipment should not compromise your aircraft. With the Spectre, you won't sacrifice anything. A covert sensor, housed in the aircraft's tail cone, can be deployed and retracted on-demand while airborne. Two doors open on the bottom of the fuselage to allow the camera to reach its operating position, providing a 360-degree field of view. When not in use, it retracts into a protected, streamlined storage space, leaving your cabin and performance intact.

Inside the cabin, there is ample room for the operator console and seat, plus six additional passenger seats, a fully enclosed flushing lavatory and an internal 40-cubic foot baggage area, accessible in flight. The operator console puts two display monitors, a digital video recorder, a communications panel and a lift-platform control right at your fingertips. Multiple expansion bays allow additional radios and data links to suit unique requirements. The operator's seat is also equipped with an Inflatable Restraint System, allowing it to be safely occupied during takeoff and landing. The whole camera operator station can be removed in a few simple steps — unlatch the console and unplug its single quick-disconnect wiring harness, and you have full use of the cabin for nine passenger seats, up to three stretchers or palletized cargo. With the standard 53 x 52-inch cargo door, the Spectre can literally be loaded with a forklift.

Pilatus has also developed a truly unique utility door option for the PC-12. This configuration provides a serious advantage. In essence, the utility door is a second door mounted within the standard cargo door that can be opened in flight to deploy supplies, cargo or para-jumpers from the aircraft. This enables operators to get the best of both worlds by allowing pressurized high speed transit at altitude, followed by low altitude unpressurized work with the door open to accomplish the mission and then re-pressurization and acceleration to high speed cruise to return to base.

## **Enter the NG**

In the spring of 2008, Pilatus started basing all new Spectre aircraft on the PC-12 NG. This latest version of the PC-12 features a number of significant improvements, including a fully integrated Honeywell Primus Apex avionics system, a completely new cockpit designed by BMW Group Designworks USA, and a more powerful Pratt & Whitney Canada PT6A engine.

When examining the cockpit, you immediately notice it is all glass, with four large flat panel displays. These displays are part of the Honeywell Primus Apex system that now replaces the standalone instruments found in the legacy version. The Apex system was developed specifically for the single pilot PC-12 NG to reduce pilot workload and improve systems integration.

Immediately in front of the pilot is the Primary Flight Display, showing all critical flight information, such as attitude, speed, heading and altitude. It also displays engine instrumentation and nav/com and transponder frequencies. Two additional screens located on the center panel are Multi Function Displays used for graphical flight planning and systems information. Flight planning is done via a joystick using Honeywell's INAV graphical flight planning system, which enables crews to update and modify flight plans, waypoint lists, and all navigation objects with a point-and-click interface. INAV merges navigation and sensor data onto a single display and layers information, including terrain, traffic and weather, to provide pilots unmatched situational awareness on a single display. Worldwide navigation data is built into the system and includes terrain, airports, airspace, airways, navigational aids and geopolitical boundaries.

The PC-12 NG sets a new standard when it comes to systems integration. The Apex software gathers all critical and non-critical flight information and monitors the systems, including details such as temperature, pressure, fuel flow and aircraft configuration. If any anomalies are detected, the pilot is alerted. The integration includes safety and comfort features, as well. Advanced onboard computers digitally control cabin pressurization and climate control. The system has the ability to take information directly from the flight plan and schedule cabin pressure in order to create an optimum passenger environment with no input needed from the pilot. And the dual zone climate control makes maintaining a comfortable temperature for the cockpit and cabin as easy as setting a thermostat. The computers automatically cycle both the air cycle and vapor cycle cooling systems for heating and cooling to maintain the desired temperatures.

If bells and whistles don't impress you, the engine under the PC-12 NG's hood will. The aircraft has a new powerplant, the Pratt & Whitney PT6A-67P. The 67P has evolved from Pratt & Whitney's extensive research and development into an ultra powerful gas turbine engine. This R&D has led to great strides in metallurgical technology, which has allowed Pratt & Whitney to build more powerful versions of the engine. The new 67P can easily withstand higher internal operating temperatures, which allow it to safely deliver more power during takeoff, climb and cruise without affecting durability. This makes the PC-12 NG faster than its predecessor and a better performer at altitude.

When you do the math and add up the PC-12 Spectre's broad performance envelope, retractable lift platform, cargo door, utility door, new cockpit, new engine and military-grade construction, it makes for an impressive package, even more so when you consider that it costs much less to procure and is less than half the cost to operate than much of the competition. For law enforcement agencies, the military and homeland security

departments, the ability to acquire information is just as important as the ability to act on it. The next generation PC-12 Spectre is a compelling choice for any department needing a multi-mission surveillance aircraft to meet today's operational realities and tightening budgets.