

Better together

Boeing teams across the company joined forces for the 747-8 Intercontinental flight-test program

By Jennifer Hawton and photos by Ed Turner

Essentially, it's a custom-designed and -built flying laboratory.

The wings alone, spanning 225 feet (69 meters) contain more than 820 pieces of test and evaluation equipment, 257 strain gages and 593 sensors, all of which gather millions of data points for engineers.

Building a flight-test airplane is not an easy job. And the new 747-8 Intercontinental was no exception. But this test airplane was built faster and with fewer defects because Boeing teams from different business units joined forces—another example of the benefits Boeing and its employees get by working together.

"It was the best example I have ever witnessed of the factory and Boeing Test & Evaluation working together to accomplish the overall goals of rolling out a test-ready

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flight-test aircraft," said Andy Hammer, 747-8 test program manager.

Traditionally, Airplane Program employees in the factory build the airframe while Boeing Test & Evaluation employees design, build and install test instruments after final assembly. But for the 747-8 Intercontinental, the airplane program and test and evalua-

tion teams came together, working off one plan, to build the two flight-test airplanes.

"We started with fewer than 20 people on our team," said James Jenkins, Boeing Test & Evaluation flight-test factory integration manager. "But we knew we would be impacting thousands of people. The success of the 747-8I was going to be

dependent on the work that our entire Boeing-wide team did."

Working together from the start was key to the team's success. The integrated team worked through all build scenarios to drive efficiency and a better understanding of each other's work statement and priorities.

The team learned a lot from the work done on the 747-8 Freighter, said Dave Dessenberger, Boeing Test & Evaluation flight-test manufacturing manager. "We started our 747-8I meetings about a year before major assembly, rather than the norm of starting meetings only two months before assembly," he said.

The benefits of all the pre-planning included less rework than is typical on most programs. In a rarity at Boeing, the 747-8I plan changed little throughout the build process. By allowing plenty of time for the unexpected, and keeping in touch, the integrated team was able to stick to the initial plan with very few delays.

"It really has to do with the open communication and the ability to be truthful, across the organizational and functional divides," Dessenberger explained.

Some processes were streamlined. For example, the team was able to shorten the time needed to perform a metronor calibration, a process that precisely measures control surface positions. This same kind of calibration had taken three days for another program to complete.

"We did it in only 36 hours on the Intercontinental because we had planned every part of it, and the factory and test teams were working together to make sure this critical test got completed," said Steve Brown, Boeing Test & Evaluation lead flight-test instrumentation engineer for 747-8I, and the team lead responsible for designing and installing all the instrumentation.

"Deputy Test Program Manager Brian Johnson and his team really accomplished something special," said Paul Nuyen, vice president, 747 Manufacturing and Everett Site Support. "They worked as one team through many challenges." ■

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PHOTOS: (Far left) From left, Scott McCain, factory industrial engineer, James Jenkins, flight-test factory integration manager, and Nick Martin, factory final assembly industrial engineer. **(Left)** From left, Jesse Robinson, factory final assembly industrial engineer, Steve Brown, flight-test instrumentation lead, and James Yin, final assembly build integration leader.

