

# Flight plan

Boeing test pilots who will fly the Dreamliner and 747-8 Freighter will soon be in the spotlight, but the goal is to make the first flights as routine as possible

By Eric Fetters-Walp



When the new 787 Dreamliner and the 747-8 Freighter first take flight, the experience will mark an apex, rather than a beginning, for the Boeing test pilots behind the controls.

"It's akin to an athletic team. You train and train for the big event. And when you get to it, it's almost a relief as you get onto the field and get the opportunity to do what you know so well," said Frank Santoni, chief commercial airplanes test pilot for Boeing Test & Evaluation.

Boeing's test pilot corps will be in the spotlight in the year ahead. Not only will the two new commercial jetliners undergo thousands of hours of flight testing, but Boeing is part of a team with the U.S. Navy

conducting a formal flight-test program of the new P-8A Poseidon maritime patrol and surveillance aircraft, a modified 737.

The last time Boeing simultaneously ran two commercial flight-test programs of this scale was 25 years ago, when the 757 and 767 were put through their paces. For many of the test pilots involved in today's 787 program, it's also their first experience testing an all-new airplane. It has been 15 years since the 777 was introduced.

"During the 777 testing, we had a number of airplanes flying at the same time," said Chuck Killberg, director of Flight Operations and chief pilot for Boeing Test & Evaluation, the enterprisewide team

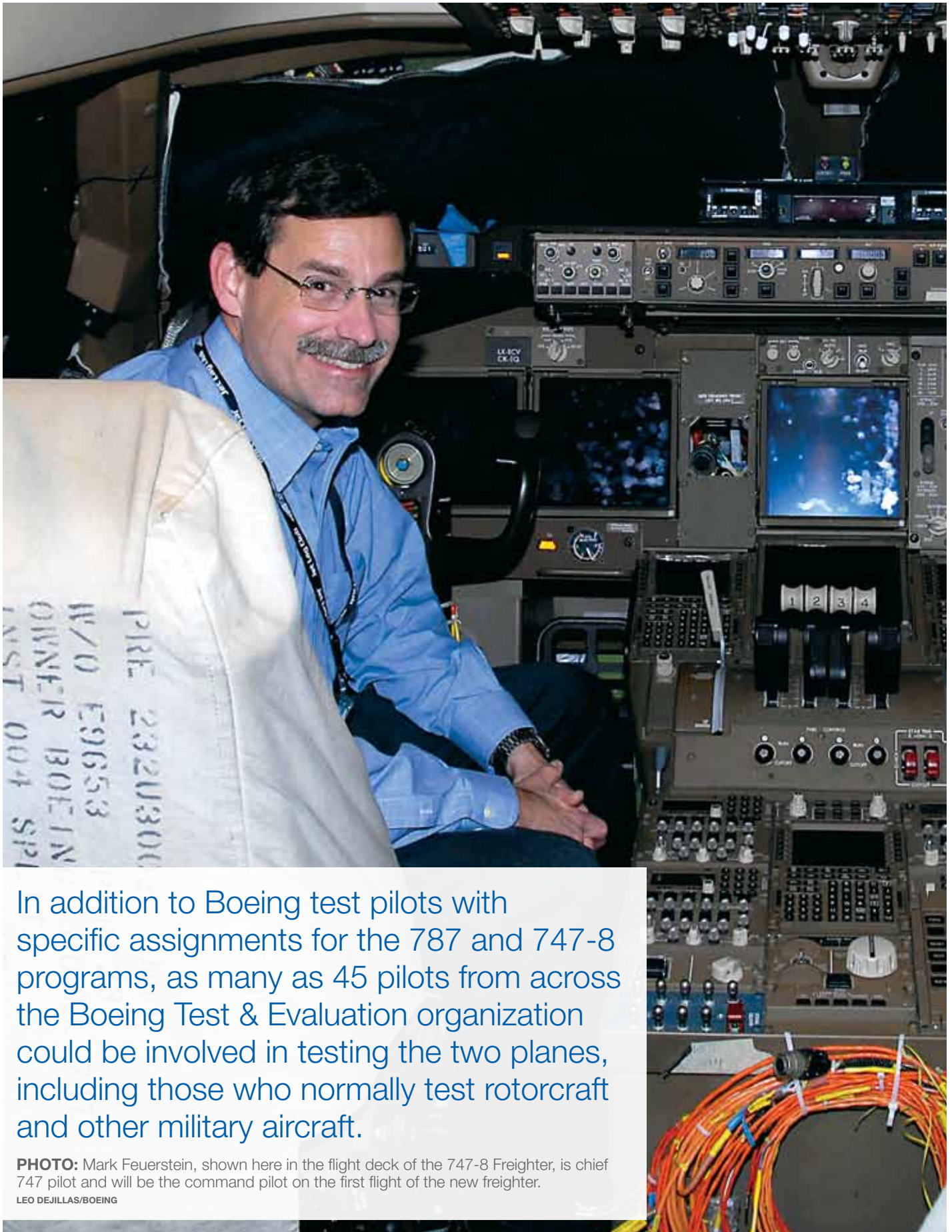
responsible for the test and evaluation of new Boeing airplanes. "But we haven't had, in the history of the company, a testing program as extensive as the one coming up. It'll be a big job. But our team is prepared to take it on and not miss a beat in the commitments we made to [Commercial Airplanes and Integrated Defense Systems] programs."

It's a time of anticipation amid great preparation for the few who will be behind the controls for first flights of the 787 and 747-8. Ironically, the goal of the test pilots during these momentous events is to make sure the flights are as routine as possible.

"A first flight will always be interesting

**PHOTO:** Tom Imrich, senior test pilot for the 747 program, waves from the doorway of the first 747-8, which is being prepared in Everett, Wash., for flight tests starting in early 2010. Imrich will be co-pilot on the first flight. GAIL HANUSA/BOEING





In addition to Boeing test pilots with specific assignments for the 787 and 747-8 programs, as many as 45 pilots from across the Boeing Test & Evaluation organization could be involved in testing the two planes, including those who normally test rotorcraft and other military aircraft.

**PHOTO:** Mark Feuerstein, shown here in the flight deck of the 747-8 Freighter, is chief 747 pilot and will be the command pilot on the first flight of the new freighter.

LEO DEJILLAS/BOEING



and exciting,” but not exciting in a dangerous sense, explained Tom Imrich, who’s scheduled to co-pilot the 747-8 Freighter on its first flight with Mark Feuerstein. “It’s very rare and few and far between that you find something that doesn’t go as planned.”

The engineering test pilots at Boeing—those who perform the intensive tests needed anytime a new model rolls out or upgrades are made to existing models—are involved from the earliest design stages of a new airplane program. Which is why, in addition to a shared love of flying, the test pilots all have broad technical experience.

“We’re dealing with and speaking with engineers through the development

process. So we need to speak with a knowledge and vocabulary we both can understand,” said Kirk Vining, who will captain the third 747-8 through its flight tests.

Vining earned a degree in aeronautical engineering and spent 14 years as a test pilot for Bombardier before joining Boeing. Many of his colleagues have test-pilot experience from their time in the military. Mike Carriker, who gained experience as a test pilot and flight instructor during 12 years in the U.S. Navy, said the differences between testing military aircraft and commercial airplanes aren’t as stark as some people might think.

“Technically, there’s no difference. You

have a task to do, and a task to do safely, except there are no ejection seats in these airplanes,” said Carriker, who is scheduled to captain the 787 Dreamliner’s first flight with test pilot Randy Neville.

Previously, test pilots for Boeing’s passenger jets and military aircraft worked for different parts of the enterprise. All test pilots soon will be part of Boeing Test & Evaluation, an Engineering, Operations & Technology organization that will oversee flight testing for Commercial Airplanes and IDS. Through this companywide approach, Boeing can better support all its flight-test needs. In fact, beyond the specific pilots designated for certain key roles in the 787 and 747-8 flight-test programs, as many as



The six Dreamliner test planes will undergo about 5,000 hours of testing, or more than 200 days.

**PHOTO:** (From left) Jeff Croft, Engineering leader for the 787 Systems team; Mike Carriker, chief test pilot for the 787 program; Mike Delaney, vice president and chief project engineer of the 787 program; Mike Sinnett, vice president and chief engineer of Systems for the 787 program; and Mike Bryan, 787 test pilot, enjoy a light moment between taxi test runs of the first 787 Dreamliner in Everett, Wash., earlier this year.

GAIL HANUSA/BOEING



45 pilots from across BT&E—including those who normally test rotorcraft and other military aircraft—could be involved with testing these airplanes. That doesn't include another 50 or more pilots who will support the programs in various roles.

In addition to the engineering test pilots, Boeing has production test pilots, who fly and certify every airplane that rolls out of the factory before the planes are turned over to the customers. Engineering test pilots sometimes assist in those production tests as well.

Heather Ross, who's assigned to the fourth of six 787 test planes, has worked both as a production test pilot and now as an engineering pilot. Ross, who also has flown in the U.S. Air Force and for United

Airlines, said there's a distinct difference between the different test pilot roles.

"As a production pilot, the major part of your job is quality assurance. You're verifying the airplane does what Boeing says it can do," Ross said. "As an engineering test pilot testing a new airplane, we're still defining how it can fly and what it can do."

Both the 787 Dreamliner and 747-8 flight-test teams have been able to sit in the actual flight decks of their new airplanes in recent months, following years of preparing in simulators. "It's been very satisfying to get our hands on the airplane and start testing it out," said Vining, the 747-8 pilot.

While the initial flights of the new



models will focus on the overall performance of the airplanes, the subsequent flight tests will focus on the minute details and specific systems. Those details are as interesting as the bigger things, Carriker said. "For example, the 787 has a new windshield, the first new windshield we've designed since 1979," he said.

How thoroughly will the new 787 be tested? Consider that the flight-testing program for the Boeing 707 six decades ago totaled about 600 hours. The six Dreamliner test planes will undergo about 5,000 hours of testing, or more than 200 days, according to Carriker, who helped test the 777 when it was introduced.

Some of that increase in testing hours is due to the growing technological



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*– Heather Ross, 787 test pilot*



**PHOTOS: (Left)** The first 787 Dreamliner went through its first taxi tests in July with Mike Carriker and Randy Neville testing the airplane's steering and braking capabilities at Paine Field in Everett, Wash.

GAIL HANUSA/BOEING

**(Inset)** Test pilot Heather Ross in the flight deck of the second 787 Dreamliner in between ground taxi tests.

RANDY NEVILLE/BOEING



Being behind the controls of an airplane, up in the sky, is the most rewarding part of the job. “Every hour that we’re flying is a really interesting hour.”

– Tom Imrich, 747-8 Freighter first flight co-pilot

sophistication of Boeing’s jetliners over the years, explained Santoni, the chief commercial airplanes test pilot. Also, with the 787, there is special testing needed for each of the engine options (Rolls-Royce and General Electric), which wasn’t required on the earliest jets. And federal safety regulations for airplanes are more detailed and stringent than in decades past, which accounts for many of the additional testing hours, he said.

During that testing period, a “day at the office” could include flying for eight hours at various locations around the world, from the heat of the California desert to the mountains of South America for high-altitude certification. At times, pilots will fly with an engine idled. Some of the pilots will perform repeated stall maneuvers. “Sometimes, you fly it every day for days on end. We’re very good at going to where the most efficient testing can be done,” Carriker said.

Flying the new 747-8 is a natural step for Imrich after his experiences with earlier generations of the 747. He flew on the first 747 Boeing ever built before it was parked as a museum piece. While working for the Federal Aviation Administration, he issued the first type rating for the 747-400 model in 1988 and he co-piloted the final 747-400 on a production flight test last spring.

Imrich said he particularly looks forward to the more challenging flight tests, such as those typically done in the past in Iceland. “For me, I’ve always worked in the field of bad weather and low-visibility landings and takeoffs.” But like his fellow test pilots, Imrich said just being behind the controls of an airplane, up in the sky, is the most rewarding part of the job.

“Every hour that we’re flying is a really interesting hour,” he said. ■

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**PHOTO:** Tom Imrich, senior test pilot for the 747 program, looks out from the flight deck of the first 747-8. He will be co-pilot for the airplane’s first flight.

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