

# Tops in ETOPS

## 777 is the new leader in extended operations

BY LAUREN PENNING

If you've taken a transoceanic flight in a 777, you might not be aware of the certification that lets this jetliner serve these long-haul trips more efficiently.

The certification is for extended operations, or ETOPS flights, and allows an airplane to fly more directly to its final destination without the requirement to be as close to alternate airports. ETOPS flights, typically flown over an ocean, allow airplanes to fly more than 60

for the 777, described this milestone as “a validation of the architecture and concept of the 777 as a long-range and intercontinental airplane.”

The journey to being the leading ETOPS airplane began years before this milestone was achieved. Boeing designed the 777 to be “ETOPS out of the box”—that is, certified for 180-minute extended operations the day it entered service.

“Since the 777 was designed as a long-range airplane, it needed to fly these extended, transoceanic flights immediately. Otherwise it would have been difficult to market to our customers,” said Leverkuhn. Accordingly, Boeing worked closely with the FAA to create

grew, “airlines gained the flexibility to plan route structures the way they wanted,” said Daryl Heinzerling, ETOPS statistics focal for Commercial Airplanes. “We sell more airplanes because they can do what airlines need.”

According to Boeing representatives, carriers wanted airplanes to cross the North Pacific between Asia and North America. Because twin-engine airplanes use less fuel and require less maintenance, the 777 now flies more of these routes, often over polar regions, than the previous undisputed leader, the 747.

In 2007, the FAA, with cooperation from other regulatory agencies, industry experts and airlines, established new rules for ETOPS: According to Leverkuhn, “ETOPS is no longer a special certification but included in the way airplanes are now designed. This is in part because of the experience and ground work laid by the 777.”

Heinzerling and Leverkuhn are both look-

**EVA Air's 777-300ER (extended range) routinely conducts ETOPS, or extended operations, flights over the North Pacific between Asia and North America. The 777 now makes more ETOPS flights than any other airplane. TIM STAKE/BOEING**



minutes (at single-engine cruise speed) from the nearest alternate airport; and three- and four-engine airplanes more than 180 minutes (at one-engine-inoperative cruise speed) from the nearest airport.

The 777 now leads the market in performing ETOPS flights. In early 2008, the 777 flew an average of 17,000 ETOPS flights per month. That rate puts it ahead of the 767, which had held the record for 23 years and was the first jetliner approved for 180-minute operations by the U.S. Federal Aviation Administration.

### PRIDE IN THE ACHIEVEMENT

The 777 team takes pride in this achievement. Keith Leverkuhn, chief project engineer

a rigorous and unprecedented test program to validate the reliability of the airplane, including 1,000 test flights dedicated to ETOPS validation, Leverkuhn added.

Boeing also worked directly with suppliers, customers and international regulatory agencies to certify the 777 for ETOPS before the delivery of the first airplane to United Airlines in 1995. In fact, the 777's inaugural revenue flight was an ETOPS flight from London to Washington, D.C. This was a significant milestone considering “in the early days of ETOPS, other models were required to remain on more restricted routes until they demonstrated reliability for one to two years,” said Leverkuhn.

As the available range from airports

ing forward to what's next for the 777 program and future Boeing airplanes. One of those ideas is the work the 777 program is doing to gain higher ETOPS certification limits for flights up to 240 minutes from airports.

“It's no accident that Boeing airplanes have been leading the industry in ETOPS flights for the past quarter-century,” Heinzerling said. “The company has worked very hard over the years to design, test and validate airplanes that safely provide these capabilities for our customers.” ■

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