

Joe Sutter

1921-2016

Boeing's Joe Sutter, who died last month at 95, had a huge influence on what may be the two most important commercial aircraft of the late 20th century.

One was the 747, the iconic humped-back transport that expanded not just passenger and cargo capacity but airlines' and competing airframers' thinking about the possibilities of large aircraft. He led design of the double-aisle, double-deck aircraft. And, when squeezed for resources, he stood up to Boeing CEO Bill Allen to keep the design team intact. The result was an airplane whose size, range, speed and unit operating costs changed the face of international air travel. For that, Sutter's epitaph will forever be "the father of the 747."

But before that, Sutter played a critical role in the development of the 737, the ubiquitous single-aisle airliner that enabled the low-cost carrier model and an airplane that has been a money-maker in Seattle for decades. When Boeing began concepts for the airplane, it aimed for a T-tail like McDonnell Douglas's DC-9. Sutter pushed for a different approach, one that would use underslung engines and increase the dihedral of the wing outboard of the engines, making it the first Boeing airplane with a cranked spar.

Here the result is at least as impressive as that of the 747. The design has proven remarkably flexible. Fifty years later, the 737, like the 747, is still in production—and still evolving with the MAX generation. As of early this month, Boeing had delivered 9,129 of the twin-jets, and another 4,404 were still on firm order.

Born March 21, 1921, Joseph P. Sutter was the son of a first-generation Slovenian immigrant working in the Seattle meat-packing industry. Fascinated by aviation as a boy, Sutter worked on a paper route and as a part-time production-line employee at Boeing to pay for his first semester studying aeronautical engineering at the University of Washington. After graduating, service in the U.S. Navy during World War II and postwar studies at the Navy's aviation engineering school, Sutter had two job offers—one from Boeing, the other from Douglas. His Seattle-born wife, Nancy, had just become pregnant and wanted to stay near home.

Sutter worked on Boeing's first jet transport, the 367-80, or "Dash 80." Increasingly recognized for his engineering abilities, Sutter took bigger roles in the design and development of the company's commercial jetliner



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family. He was involved in developing an innovative wing-glove modification to increase the critical Mach number of the 707 wing for the 720B development. The change enabled the 720B to compete more effectively with the Convair CV-990 without a redesign of the whole wing.

Working on the 727, Boeing's first short-haul jet, he was key to the aircraft's sophisticated flap design. When he was working with legendary Boeing designer Jack Steiner on the 737, Sutter advocated

placing the engines beneath the wing "where they belonged" rather than at the tail. For their work on the "Baby Boeing," Sutter and Steiner earned patents, Sutter for the engine placement and Steiner for making the cabin wide enough for six passengers to sit abreast. And they each got the standard \$50 bonus from the company for employee patents.

At the helm of the 747 effort beginning in 1965, Sutter led the design away from Pan American Airlines chief Juan Trippe's initial concept of a full-length double-decker to the very wide single deck with twin aisles—the first widebody. The cross-section, which was large enough to seat 10 passengers across, was drawn around the space required to accommodate two freight pallets on the main deck. Focusing on carrying cargo also led to the positioning of the flight deck above the main deck, creating the 747's hump. With supersonic aircraft on the drawing board in Europe and the U.S., the 747 was expected to be used more as a freighter than as a passenger airliner.

In later years, Sutter remained active in Boeing's engineering and product development and worked on the 757 and 767. In 1985, he received the National Medal of Technology and Innovation from President Ronald Reagan.

Sutter also served on the presidential commission that investigated the explosion of the space shuttle Challenger in 1986. At one point in the commission's hearings, he bristled when NASA's approach to safety was likened to that of the 747. He told the witness pointedly that there was quadruple redundancy on "my bucket."

Although he had "retired" in 1986, he still had an office at Boeing and was looking forward to getting back last month when he seemed to be recovering from pneumonia. Even at 95, Joe Sutter might have had more ideas to revolutionize the business. ☐