

## A Mighty Design: The Boeing B-314 Flying Boat

The apogee of pre-war commercial air transport – Boeing’s B-314 “Super Clipper”, was in no small part the result of a military vision – air power that could spread its wings over far-flung American strongholds such as Hawaii, Alaska, and the Panama Canal. The world was roiling with danger from potential threats and America’s military aviation planners understood that future defense meant projecting air power far from shore, and great distances north and south.

The concept was realized, up to a point, in the huge Boeing XB-15 bomber, which was carried aloft on a mighty wing – but was powered by engines that weren’t up to the job. The XB-15 never made it out of the prototype stage (although that one airplane went on to serve as a transport, known as the XC-105, or “Grandpappy” to the crew). Besides, the mid-1930’s were a time when the forces of isolationism and economic stress largely governed policy-making for America, and support for developing military technology on Uncle Sam’s dime was limited. But if the mid-1930’s were not a time of robust military expenditure in the U.S., there was growing action in the civil aviation sector.

Support for the concept of long-range aircraft was alive and well – at Pan American Airways. In February 1936, Pan Am asked aircraft manufacturers for competitive bids on a new



Boeing XB-15 Prototype (Courtesy: Boeing Aircraft)



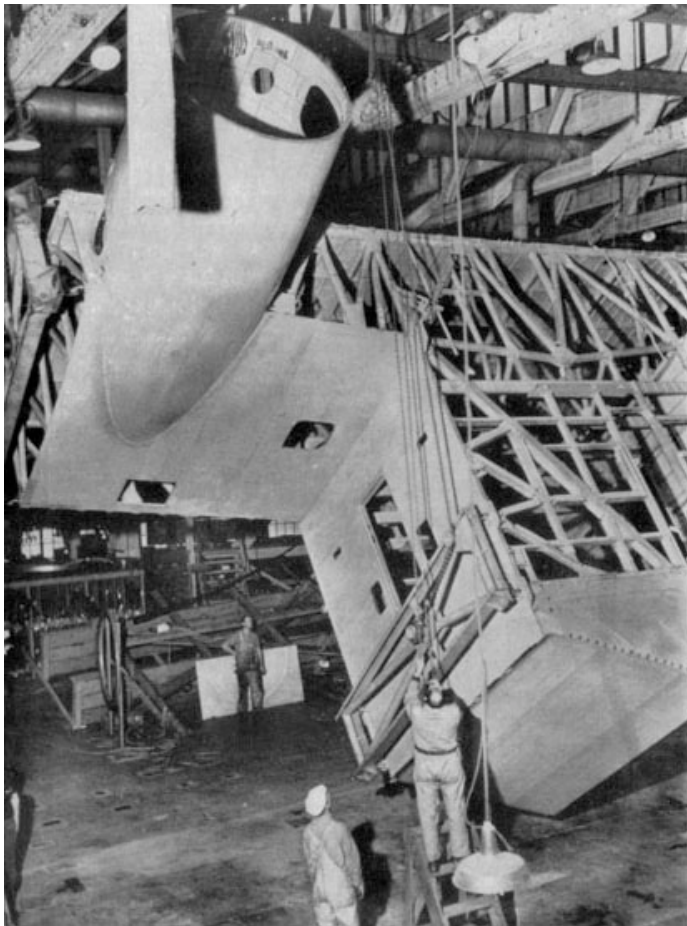
Boeing Designer Wellwood Beall onboard a B-314 (Courtesy: Boeing Aircraft)

generation of flying boats that could fill the gaps in the airline’s expanding international route network, with a particular eye on the transatlantic routes that President Juan Trippe had long regarded as the keystone link for Pan Am’s global route system. The challenge the airline laid out to

aircraft builders was for an airplane that could fly 4,000 miles against a 30-mile per hour headwind, and carry a sufficient payload.

It was Boeing's good luck that aircraft designer Wellwood Beall was on their payroll. He had been pondering just such a development. As an engineer-salesman selling Boeing fighter planes in China, he had been spending his spare time envisioning a transoceanic flying boat. He returned from Shanghai to Seattle in the summer of 1935, bringing his increasingly detailed flying boat concept with him. A few months later, he was asked to help prepare Boeing's answer to Pan Am's request for a proposal.

He had methodically thought through many aspects of the design challenge, and one of the most important components of his concept was to incorporate the big wing that had been



Boeing B-314 center wing section being positioned during construction (Courtesy: Boeing Aircraft)

designed for the XB-15. If it wouldn't carry an oversized bomber aloft, it could just as well work on a commercial transport. With newly developed Wright Twin-Cyclone R-2600 engines, which could develop 1,500 hp, the big wing could be put to use on a big flying boat.

Along with Boeing, aircraft manufacturers Douglas, Martin, and Sikorsky all responded to Pan Am's request for bids, but in the end it was Beall's concept and Boeing's promised delivery dates that sealed the deal. The company signed a contract with Pan Am on July 21, 1936 to deliver six flying boats, known as model B-314's, over the course of 10 months beginning in December, 1937.

Boeing missed the promised delivery date. The construction of the complex flying machines demanded myriad time-consuming accommodations as things progressed. The first plane was

ready for testing in June 1938, but it was quickly apparent that it wasn't quite ready for actual passenger transport. The tail assembly, or empennage, would need much more lateral authority. What started as a single tail quickly went through a two-stage evolution.

Twin tails didn't suffice, so the original central fin was put back, and three vertical fins did the trick. The plane had a tendency to "porpoise" – bounce back into the air – when landing, which eventually led to a redesign of the hull configuration.

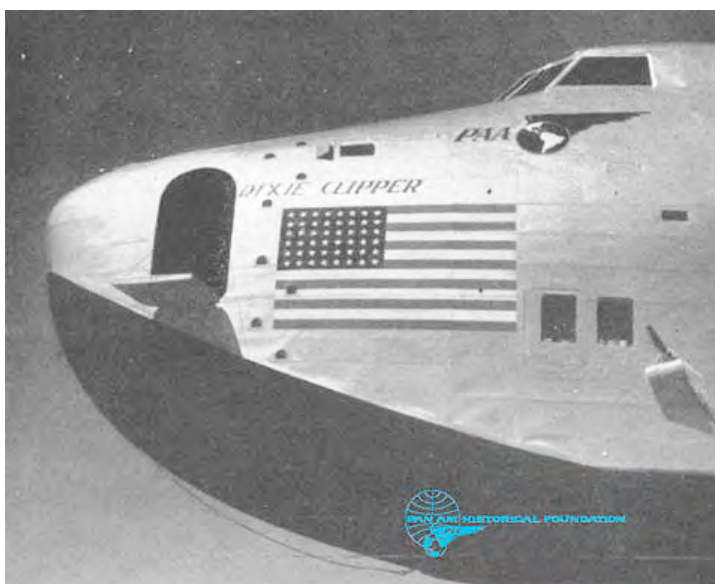


Famed test pilot Eddie Allen studies B-314 plans (Courtesy: Boeing)

On January 27th, 1939 NC-18602, to be christened the California Clipper at Treasure Island in San Francisco Bay three months later, was the first B-314 to be delivered to Pan Am. She went in to service on the Pacific run. The second B-314, to be christened Yankee Clipper was ferried east in preparation for Atlantic service.

The remaining four planes: Atlantic Clipper, American Clipper, Honolulu Clipper, and Dixie Clipper were turned over to Pan Am over the course of the next months. It was the honor of the Dixie Clipper, NC-18605, under the command of Capt. R.O.D. Sullivan, to inaugurate regularly scheduled passenger service to Lisbon, Marseilles and Southampton from Port

Washington, New York on June 28, 1939, carrying 22 passengers.



The mighty bow of Pan Am's Dixie Clipper (Photo: PAHF)

Six more of the big flying boats – dubbed B-314A's - would be ordered by Pan Am, with upgraded performance thanks to enhanced Wright engines. As the world slid towards global war, it became clear that transoceanic aviation networks were absolutely critical – so much so that Pan Am was induced to sell three of the new planes to the British, already fighting a life-or-death struggle in Europe. The big wings on the Boeings, first designed to carry warplanes

aloft, would go on to serve critical roles on transport aircraft in the defense of freedom – keeping vital connections open between continents, carrying high-value personnel and cargo at high speed to far-flung destinations.

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