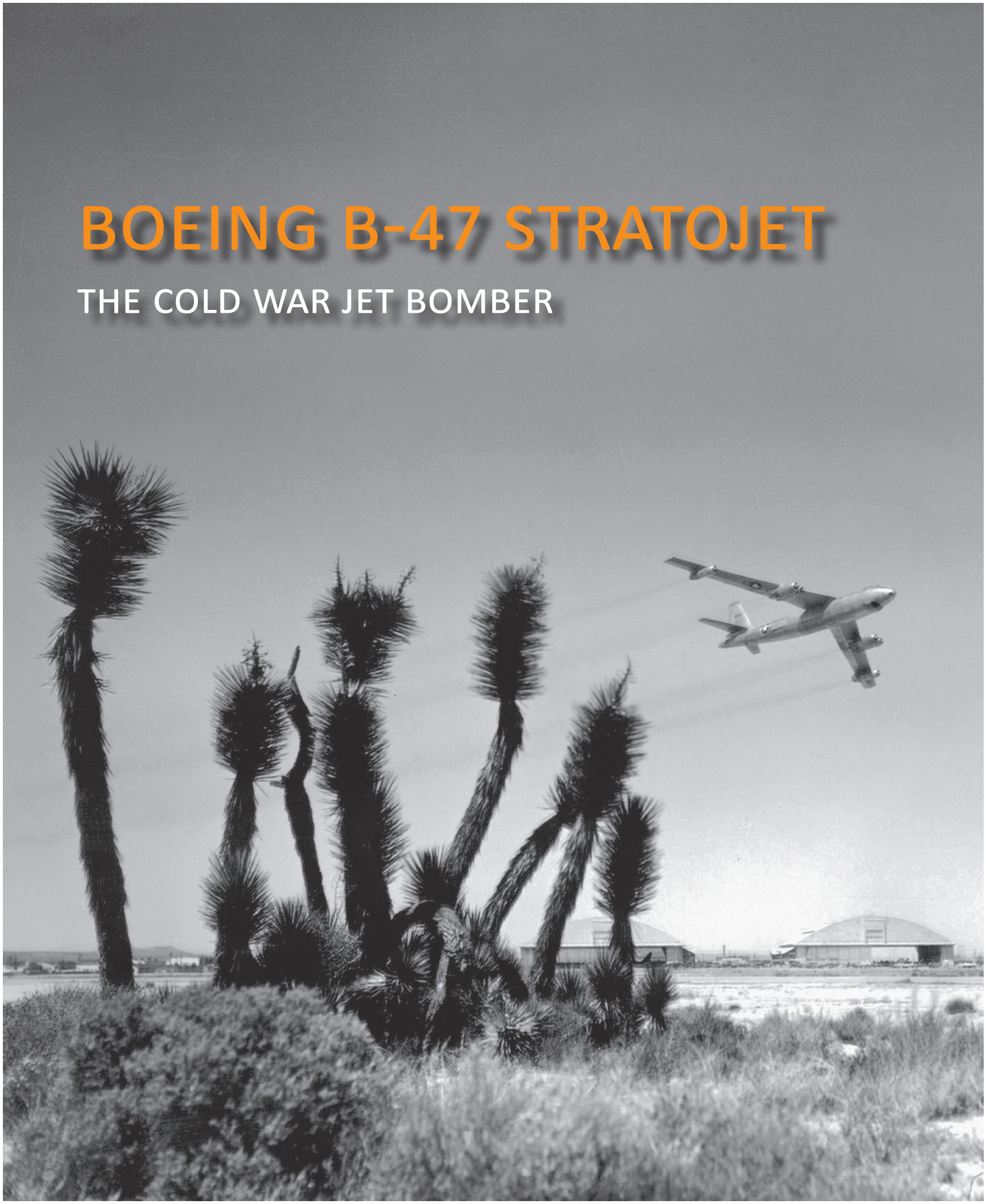
BOEING B-47 STRATOJET

THE COLD WAR JET BOMBER



Boeing B-50D, the forerunner of the B-47 was a further refinement of the WW II B-29 bomber.
(Photo: Boeing)

INTRODUCTION

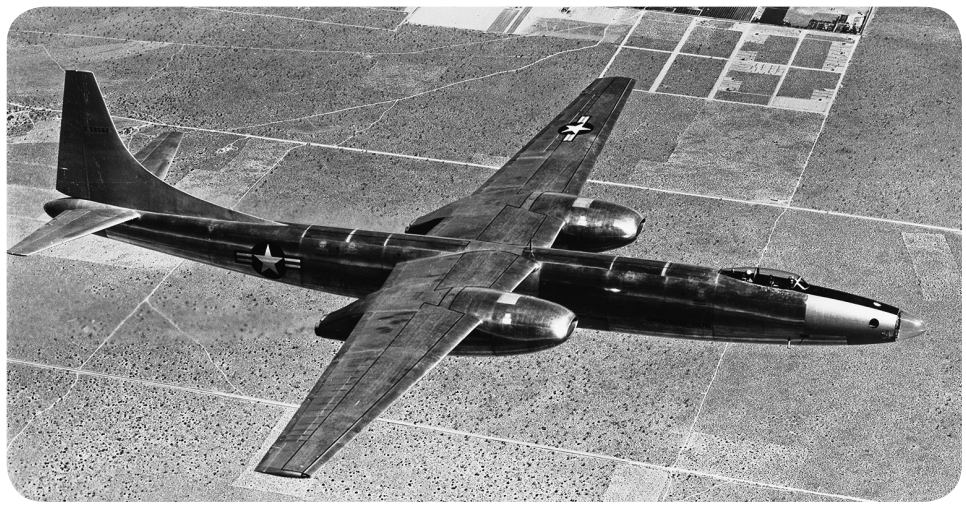
At the end of the Second World War in August 1945 large numbers of U.S. bombers were scrapped. This included not only the B-17 and the B-24, but also the, at that time still modern, B-29. This piston engine bomber was further developed into the B-50, fitted with more powerful piston engines. However, by that time it was evident that the jet bomber would soon replace the older generation of piston engine bombers. The first jet bomber to go into production after the war was the North American B-45 Tornado. With its straight wings and conventional construction it was not an excellent performer. It was evident that much more was needed.

This would come from captured German aerodynamic research data on swept wings. With aircraft nearing the critical speed of sound swept wings had many advantages and soon the German ideas were put into practice. The first swept wing fighter would be the North American F-86 Sabre. Soon the swept wing bomber would also be reality. Built by Boeing, designated as B-47 and named the Stratojet it was a quantum leap in aircraft development. Boeing initially entered the unknown when they started this project but soon it would be evident that Strategic Air Command would have its multi-engine jet bomber with a speed performance similar to the latest jet fighters....

The Martin B-26G with serial number 44-68221 and re-designated as XB-26H was used for landing practice of the tandem wheel system. Note extra external stiffeners on the fuselage! (U.S.A.F.)

Early design and development:
In 1944 the U.S. government released the specifications for a jet-powered bomber to replace the existing B-29. Three companies, Boeing, Convair and Martin finally received a development contract and all three companies built prototypes for testing. The final bomber prototypes from Convair and Martin were the XB-46 and XB-48. They both had straight wings. Convair's B-46 was fitted with 4 jet engines housed in two underwing engine nacelles. Martin's B-48 even had six jet engines, grouped in sets of 3 under each wings. The XB-46 and XB-48 made their first flight in the early summer of 1947 when the Boeing design Model 450, known as XB-47, was still under construction. The XB-46 and XB-48 both did not meet the specifications for speed. Boeing's design was originally also envisioned with a straight wing but with captured German research data available on swept wings the design team made a radical re-design of the original project. This design team consisted of George Shairer, Ed Wells, George Martin

The Martin XB-48 was one of the competitors of the B-47. It lost! (Photo: Martin)



Convair's XB-46 was another loser in the medium jet bomber competition. Although it flew very well its performances were disappointing. (Photo: Convair)

and Bob Jewett. Shairer actually visited Germany in 1945 to examine data obtained by German aircraft manufacturers on the advantage of swept wings. He was soon convinced the newly projected Boeing jet bomber had to be fitted with swept wings and tail.

Boeing had a large wind tunnel making it possible to test experimental airplane models in-house. It was used extensively to find out the optimal aerodynamic shaping of the new B-47 bomber. Leading aerodynamicist for the B-47 project was Bob Withington.
Boeing's final design, for which two prototypes were ordered, was at that time a very advanced and radical design. It featured 35° swept wings with the engines fitted in underwing pods. The inner pod housed two jet engines, the outer pot a single. Selected engine for the first prototype was the General Electric J35 jet engine, then still known as the TG-180. Production of the J35 was later taken over by Allison. Also the tail was swept. With its high speed a remotely controlled tail armament of a double 0.50 cal. (12.7 mm) machine gun was considered as more than sufficient. The guns were operated by the co-pilot. Further, it featured a double-wheel tandem undercarriage that could be retracted in the fuselage. It had two small auxiliary wheels retracting in the inboard engine nacelles. Another unique feature was that the wings were designed to flex up-and-down while flying. At that time this was a very daring concept! Because of its high wing loading it was already designed from the beginning to make use of rocket bottles (JATOs) for take off. Also the use of a large tail parachute was standard from the beginning. This tail parachute was developed by a German engineer who developed a similar device during the war for the Junkers Ju-87 Stuka! It worked with a small drogue chute that also acted as a dive brake during landing. At touch-down, the final much larger chute was deployed to reduce the landing run to acceptable proportions. If a go-around was necessary the drogue chute could be jettisoned and the aircraft could then normally accelerate for a second try.

Roll-out ceremony of the first XB-47 prototype no. 46-065 on 12 September 1947. *(Mark Nankivil collection)*