Building the FLYING FORTRESS

BOEING AND THE AIR CORPS ATTEMPT TO MOLD THE B-17 DESIGN INTO A MORE COMBAT-WORTHY BOMBER — PART THREE

BY MICHAEL O'LEARY

Classic view of the first B-17B getting airborne on 27 June 1939. The view shows the broad wing that gave the Fort its excellent lifting capabilities while the intercooler intakes can be seen in the leading edges. The B-17B saw the introduction of hydraulic brakes, replacing the earlier pneumatic units. Also, the flaps were now metal, rather than fabric, covered while the rudder area was slightly increased and the area of the ailerons slight decreased. Also, the B-17B could be fitted with external underwing bomb racks that could accommodate up to 2000 pounds of extra weapons. While the B-17B went into production, Boeing accountants had come to the startling revelation that the company was actually losing money on each new bomber built. This led to acrimonious meetings with the Air Corps and the military was entirely unsympathetic to Boeing's problems. The Air Corps even went as far as to threaten contract cancellation. Boeing then countered to withdraw from the program, reasoning there was no point building aircraft and losing money on each plane. Finally, a price of $202,500 per B-17B was agreed upon — better than the original $198,000 but not by much. However, seeing the futility of ordering just small batches of warplanes the Air Corps exercised an option for 29 more B-17Bs to go with the original ten ordered. There were serious delays with the GE turbosuperchargers but Boeing delivered all aircraft between 29 July 1939 and 30 March 1940 — a plus in the company's favor. This allowed the 2nd BG at Langley, Virginia, to swap its Y1B-17s for the B-17B and allow the 7th BG to go operational at Hamilton Field, near San Francisco. (Gordon S. Williams)

The 2nd Bombardment Group established the pioneering doctrine of high-altitude bombardment but the Y1B-17s were not up to the task. Accordingly, 37-369 was pulled for extensive modifications and to serve as the testbed for the General Electric turbosuperchargers. It thus became the sole Y1B-17A and made its first flight on 29 April 1938, being delivered to the Air Corps for further testing on 31 January 1939. With the turbosuperchargers, the Wright R-1820-51 radials could develop 800-hp each at 25,000-ft while those on the Y1B-17 could develop just 775-hp at 14,000-ft, the rating then falling off rapidly as the bomber climbed. The Y1B-17A broke a record when it carried a 11,023-lb payload over a 621.4 mile course at an average speed of 239.4-mph. As can be seen, the turbosuperchargers were originally mounted atop the cowlings and ram air was supplied by very large ducting units. However, Y1B-17A testing proved that more efficient use of the turbosuperchargers could be obtained by fitting the units to the bottoms of the nacelles, and these changes became standard on the B-17B and subsequent aircraft. (Gordon S. Williams)

Basic B-17B fuselage in the assembly building with the vertical fin of the prototype Model 307 Stratoliner sticking up over the Fort's nose. The photo shows to advantage how the top fuselage and gun cupolas were attached later as separate units. The image was taken on 12 February 1939. Testing of earlier Y1B-17s was being carried out at a rapid rate by the 2nd Bombardment Group but problems were persisting with the turbosupercharger units and Boeing spent $100,000 get the installation correct on the Y1B-17A — to their surprise when discovering the Air Corps would not pay the bill! Boeing suggested to the Air Corps that the new turbosupercharged variant should be put into production and the service agreed, issuing a contract for ten Model 299E bombers (soon changed to Model 299M). Looking externally similar to earlier Forts, the new B-17B had many changes including an entirely new nose section that eliminated the odd kinked forward fuselage and deleted the rather useless rotating turret mounted in its extremity. The new section, while being more attractive in appearance, was seven inches shorter and saw the navigator/bombardier moved from his position behind the Y1B-17s pilots to a more practical forward position in the nose itself. New plexiglass panels were installed in the reconfigured nose section, with an optically-flat bomb aiming panel also built into the unit. Finally, a ball and socket mounting was fitted in the nose for the installation of a Browning .30-caliber machine gun.