**Boeing B-17 Flying Fortress**

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| **B-17 Flying Fortress** |
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| Boeing B-17E |
| **Role** | [Heavy bomber](http://en.wikipedia.org/wiki/Heavy_bomber)[Strategic bomber](http://en.wikipedia.org/wiki/Strategic_bomber) |
| **National origin** | United States |
| **Manufacturer** | [Boeing](http://en.wikipedia.org/wiki/Boeing) |
| **First flight** | 28 July 1935 |
| **Introduction** | April 1938 |
| **Retired** | 1968 ([Brazilian Air Force](http://en.wikipedia.org/wiki/Brazilian_Air_Force)) |
| **Primary users** | [United States Army Air Forces](http://en.wikipedia.org/wiki/United_States_Army_Air_Forces)[Royal Air Force](http://en.wikipedia.org/wiki/Royal_Air_Force) |
| **Produced** | 1936–1945 |
| **Number built** | 12,731 |
| **Unit cost** | US$238,329 |
| **Variants** | [XB-38 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_XB-38_Flying_Fortress)[YB-40 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_YB-40_Flying_Fortress)[C-108 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_C-108_Flying_Fortress) |
| **Developed into** | [Boeing 307](http://en.wikipedia.org/wiki/Boeing_307) |

The **Boeing B-17 Flying Fortress** was a four-engine [heavy bomber](http://en.wikipedia.org/wiki/Heavy_bomber) aircraft developed for the [United States Army Air Corps](http://en.wikipedia.org/wiki/United_States_Army_Air_Corps) (USAAC) introduced in the 1930s. Competing against [Douglas](http://en.wikipedia.org/wiki/Douglas_Aircraft_Company) and [Martin](http://en.wikipedia.org/wiki/Glenn_L._Martin_Company) for a contract to build 200 bombers, the [Boeing](http://en.wikipedia.org/wiki/Boeing) entry outperformed both competitors and more than met the Air Corps' expectations. Although Boeing lost the contract because the prototype crashed, the Air Corps was so impressed with Boeing's design that they ordered 13 B-17s. The B-17 Flying Fortress evolved through numerous [design advances](http://en.wikipedia.org/wiki/B-17_Flying_Fortress_variants).

The B-17 was primarily employed by the [United States Army Air Forces](http://en.wikipedia.org/wiki/United_States_Army_Air_Forces) (USAAF) in the daylight precision [strategic bombing campaign of World War II](http://en.wikipedia.org/wiki/Strategic_bombing_during_World_War_II) against German industrial, civilian, and military targets. The United States [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) based in England and the [Fifteenth Air Force](http://en.wikipedia.org/wiki/Fifteenth_Air_Force) based in Italy complemented the [RAF Bomber Command](http://en.wikipedia.org/wiki/RAF_Bomber_Command)'s nighttime area bombing in [Operation Pointblank](http://en.wikipedia.org/wiki/Operation_Pointblank) to help secure air superiority over the cities, factories and battlefields of Western Europe in preparation for [Operation Overlord](http://en.wikipedia.org/wiki/Operation_Overlord). The B-17 also participated to a lesser extent in the [War in the Pacific](http://en.wikipedia.org/wiki/Pacific_Ocean_theater_of_World_War_II) where it conducted raids against Japanese shipping and airfields.

From its pre-war inception, the USAAC (later USAAF) touted the aircraft as a strategic weapon; it was a potent, high-flying, long-ranging bomber capable of unleashing great destruction, able to defend itself, and having the ability to return home despite extensive battle damage. It quickly took on mythic proportions. Stories and photos of B-17s surviving battle damage widely circulated, increasing its iconic status. With a [service ceiling](http://en.wikipedia.org/wiki/Service_ceiling) greater than any of its Allied contemporaries, the B-17 established itself as a superb weapons system, dropping more bombs than any other U.S. aircraft in World War II. Of the 1.5 million [metric tons](http://en.wikipedia.org/wiki/Metric_ton) of bombs dropped on Germany by U.S. aircraft, 640,000 tons were dropped from B-17s.

**Design and development**

Model 299 *NX13372*

Nose turret with gun fitted to the prototype

On 8 August 1934, the [U.S. Army Air Corps](http://en.wikipedia.org/wiki/United_States_Army_Air_Corps) (USAAC) tendered a proposal for a multi-engine bomber to replace the [Martin B-10](http://en.wikipedia.org/wiki/Martin_B-10). Requirements were that it would carry a "useful bombload" at an altitude of 10,000 feet (3 km) for ten hours with a top speed of at least 200 miles per hour (320 km/h). They also desired, but did not require, a range of 2,000 miles (3,200 km) and a speed of 250 miles per hour (400 km/h). The Air Corps were looking for a bomber capable of reinforcing the air forces in Hawaii, Panama, and Alaska. The competition would be decided by a "fly-off" at [Wright Field](http://en.wikipedia.org/wiki/Wright_Field) in [Dayton](http://en.wikipedia.org/wiki/Dayton%2C_Ohio), [Ohio](http://en.wikipedia.org/wiki/Ohio). Boeing competed with the [Douglas DB-1](http://en.wikipedia.org/wiki/Douglas_B-18_Bolo) and [Martin Model 146](http://en.wikipedia.org/wiki/Martin_Model_146) for the Air Corps contract.

The prototype B-17, designated **Model 299**, was designed by a team of engineers led by E. Gifford Emery and [Edward Curtis Wells](http://en.wikipedia.org/wiki/Edward_Curtis_Wells) and built at [Boeing](http://en.wikipedia.org/wiki/Boeing)'s own expense. It combined features of the experimental [Boeing XB-15](http://en.wikipedia.org/wiki/Boeing_XB-15) bomber with the [Boeing 247](http://en.wikipedia.org/wiki/Boeing_247) transport airplane. The B-17 was armed with bombs – up to 4,800 pounds (2,200 kg) on two racks in the bomb bay behind the cockpit – and five 0.30 inches (7.62 mm) [machine guns](http://en.wikipedia.org/wiki/Machine_gun), and was powered by [Pratt & Whitney R-1690](http://en.wikipedia.org/wiki/Pratt_%26_Whitney_R-1690) "Hornet" radial engines each producing 750 horsepower (600 kW) at 7,000 feet (2,100 m). The first flight of the Model 299 was on 28 July 1935, with Boeing chief test-pilot Leslie Tower at the controls. Richard Williams, a reporter for the [*Seattle Times*](http://en.wikipedia.org/wiki/The_Seattle_Times) coined the name "Flying Fortress" when the Model 299 was rolled out, bristling with multiple machine gun installations. Boeing was quick to see the value of the name and had it trademarked for use. On 20 August 1935, the prototype flew from [Seattle](http://en.wikipedia.org/wiki/Seattle) to Wright Field in nine hours and three minutes at an average cruising speed of 252 miles per hour (406 km/h), much faster than the competition.

At the fly-off, the four-engine Boeing design's performance was superior to those of the twin-engine DB-1 and Model 146, and then-[Major General](http://en.wikipedia.org/wiki/Major_General) [Frank Maxwell Andrews](http://en.wikipedia.org/wiki/Frank_Maxwell_Andrews) of the [GHQ Air Force](http://en.wikipedia.org/wiki/United_States_Army_Air_Corps#GHQ_Air_Force) believed that the long-range capabilities of four-engine large aircraft were more efficient than shorter-ranged twin-engine airplanes, and that the B-17 was better suited to their doctrine. His opinions were shared by the Air Corps procurement officers, and even before the competition was finished they suggested buying 65 B-17s.

Crashed Model 299

Development continued on the Boeing Model 299, and on 30 October 1935 the Army Air Corps test-pilot Major [Ployer Peter Hill](http://en.wikipedia.org/wiki/Ployer_Peter_Hill) and Boeing employee Les Tower, took the Model 299 on a second evaluation flight. The crew forgot to disengage the airplane's "gust lock," a device that held the bomber's movable control surfaces in place while the plane was parked on the ground, and having taken off, the aircraft entered a steep climb, stalled, nosed over and crashed, killing Hill and Tower (other observers survived with injuries). The crashed Model 299 could not finish the evaluation, and while the Air Corps was still enthusiastic about the aircraft's potential, Army officials were daunted by the much greater expense per aircraft, (with Douglas quoting a unit price of $58,200 based on a production order of 220 aircraft, compared with a price of $99,620 from Boeing) and as the competition could not be completed Boeing was legally disqualified from the consideration for the contract. Army Chief of Staff [Malin Craig](http://en.wikipedia.org/wiki/Malin_Craig) cancelled the order for 65 YB-17s, and ordered 133 of the twin-engine [Douglas B-18 Bolo](http://en.wikipedia.org/wiki/Douglas_B-18_Bolo) instead.

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| **“** | The loss was not total...but Boeing's hopes for a substantial bomber contract were dashed. | **”** |
| —Peter Bowers, 1976 |

Boeing Y1B-17 in flight

Regardless, the USAAC had been impressed by the prototype's performance, and on 17 January 1936 the Air Corps ordered, through a legal loophole, 13 **YB-17**s (after November 1936 designated **Y1B-17** to denote its special F-1 funding) for service testing. The YB-17 incorporated a number of significant changes from the Model 299, including more powerful [Wright R-1820](http://en.wikipedia.org/wiki/Wright_R-1820)-39 Cyclone engines replacing the original Pratt & Whitneys. Although the prototype was company owned and never received a military serial (the B-17 designation itself did not appear officially until January 1936, nearly three months after the prototype crashed), the term "XB-17" was retroactively applied to the airframe and has entered the lexicon to describe the first Flying Fortress.

Between 1 March and 4 August 1937, 12 of the 13 Y1B-17s were delivered to the 2nd Bombardment Group at [Langley Field](http://en.wikipedia.org/wiki/Langley_Field) in Virginia and used for operational development and flight test. One suggestion adopted was the use of a [checklist](http://en.wikipedia.org/wiki/Checklist) to avoid accidents such as the Model 299's. In one of their first missions, three B-17s, directed by lead navigator [Lieutenant](http://en.wikipedia.org/wiki/Lieutenant) [Curtis LeMay](http://en.wikipedia.org/wiki/Curtis_LeMay), were sent by General Andrews to ["intercept" the Italian ocean liner *Rex*](http://en.wikipedia.org/wiki/Interception_of_the_Rex) 610 miles (980 km) off the Atlantic coast and take photographs. The successful mission was widely publicized. The 13th Y1B-17 was delivered to the Material Division at Wright Field, Ohio, to be used for flight testing.

A 14th Y1B-17 (*37-369*), originally constructed for ground testing of the airframe's strength, was upgraded and fitted with exhaust-driven turbochargers. Scheduled to fly in 1937, it encountered problems with the turbochargers, and its first flight was delayed until 29 April 1938. The aircraft was delivered to the Army on 31 January 1939. Once service testing was complete, the Y1B-17s and Y1B-17A were redesignated **B-17** and **B-17A** respectively to signify the change to operational status.

B-17Bs at [March Field](http://en.wikipedia.org/wiki/March_Field), California, prior to attack on [Pearl Harbor](http://en.wikipedia.org/wiki/Pearl_Harbor)

Opposition to the Air Corps ambitions for the acquisition of more B-17s faded, in late 1937, 10 more aircraft, designated **B-17B** were ordered to equipped two bombardment groups, one on each U.S. coast. Improved with larger flaps, rudder and [Plexiglas](http://en.wikipedia.org/wiki/Acrylic_glass) nose, the B-17Bs were delivered in five small batches between July 1939 and March 1940. In July 1940, a significant order for 512 B-17s was issued, however prior to the [attack on Pearl Harbor](http://en.wikipedia.org/wiki/Attack_on_Pearl_Harbor), fewer than 200 B-17s were in service with the Army, A total of 155 B-17s of all variants had been delivered between 11 January 1937 and 30 November 1941, but production quickly accelerated with the B-17 eventually setting the record for achieving the highest production rate for large aircraft. The aircraft went on to serve in every [World War II](http://en.wikipedia.org/wiki/World_War_II) combat zone, and by the time production ended in May 1945, 12,731 aircraft had been built by Boeing, [Douglas](http://en.wikipedia.org/wiki/Douglas_Aircraft_Company), and [Vega](http://en.wikipedia.org/wiki/Vega_Aircraft_Corporation) (a subsidiary of [Lockheed](http://en.wikipedia.org/wiki/Lockheed_Corporation)).

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| **“** | Though the crash of the prototype 299 in 1935 had almost wiped out Boeing, now it was seen as a boon. Instead of building models based on experimental engineering, Boeing had been hard at work developing their bomber and now had versions ready for production far better than would have been possible otherwise. One of the most significant weapons of World War II would be ready, but only by a hair.  | **”** |
| —Jess Ethell, 1985 |

**Operational history**

The B-17 began operations in [World War II](http://en.wikipedia.org/wiki/World_War_II) with the RAF in 1941, and the USAAF [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) and [Fifteenth Air Force](http://en.wikipedia.org/wiki/Fifteenth_Air_Force) units in 1942. It was primarily involved in the daylight precision [strategic bombing](http://en.wikipedia.org/wiki/Strategic_bombing) campaign against German industrial targets. In [the campaign against German aircraft forces](http://en.wikipedia.org/wiki/Operation_Pointblank) in preparation for the invasion of France, B-17 (and B-24) raids were directed against German aircraft production while their presence drew the Luftwaffe fighters into battle with Allied fighters.

Early models proved to be unsuitable for combat use over Europe and it was the B-17E that was first successfully used by the USAAF. The defense expected from bombers operating in close formation alone did not prove effective and the bombers needed fighter escorts to operate successfully.

During World War II, the B-17 equipped 32 overseas combat groups, inventory peaking in August 1944 at 4,574 USAAF aircraft worldwide. B-17s dropped 640,036 [short tons](http://en.wikipedia.org/wiki/Short_ton) (580,631 metric tons) of bombs on European targets (compared to 452,508 short tons (410,508 metric tons) dropped by the Liberator and 463,544 short tons (420,520 metric tons) dropped by all other U.S. aircraft). The British heavy bombers - the Lancaster and Halifax - dropped 608,612 and 224,207 long tons respectively.

**The RAF**

RAF Fortress B.I *AN529*.

The [Royal Air Force](http://en.wikipedia.org/wiki/Royal_Air_Force) (RAF) entered World War II with no 4-engined heavy bomber of its own in service; the biggest available were long-range medium bombers such as the [Vickers Wellington](http://en.wikipedia.org/wiki/Vickers_Wellington) which could carry up to 4,500 lb of bombs. While the [Short Stirling](http://en.wikipedia.org/wiki/Short_Stirling) and [Handley Page Halifax](http://en.wikipedia.org/wiki/Handley_Page_Halifax) would become its primary bombers by 1941, in early 1940 the RAF entered into an agreement with the U.S. Army Air Corps to be provided with 20 B-17Cs, which were [given the service name](http://en.wikipedia.org/wiki/British_military_aircraft_designation_systems) **Fortress I**. Their first operation was against [Wilhelmshaven](http://en.wikipedia.org/wiki/Wilhelmshaven) on 8 July 1941. On 24 July, the target was [Brest](http://en.wikipedia.org/wiki/Brest%2C_France), France, but again the bombers missed completely.

By September, after the RAF had lost eight B-17Cs in combat or to accidents and many instances of aborts due to mechanical problems, [Bomber Command](http://en.wikipedia.org/wiki/RAF_Bomber_Command) abandoned daylight bombing raids due to the Fortress I's poor performance. The experience showed both the RAF and USAAF that the B-17C was not ready for combat, and that improved defenses, larger bomb loads and more accurate bombing methods were required. However the USAAF continued using the B-17 as a "day" bomber, despite pleas from the RAF that attempted daylight bombing would be ineffective.

As usage by Bomber Command had been curtailed, the RAF transferred its remaining Fortress I aircraft to [Coastal Command](http://en.wikipedia.org/wiki/RAF_Coastal_Command) for use as a long range maritime patrol aircraft instead. These were later augmented in August 1942 by 19 **Fortress Mk II** and 45 **Fortress Mk IIA**. A Fortress from [No. 206 Squadron RAF](http://en.wikipedia.org/wiki/No._206_Squadron_RAF) sank [U-627](http://en.wikipedia.org/wiki/U-627) on 27 October 1942, the first of 11 U-boat kills credited to RAF Fortress bombers during the war. [No. 223 Squadron](http://en.wikipedia.org/wiki/No._223_Squadron_RAF), as part of [100 Group](http://en.wikipedia.org/wiki/No._100_Group_RAF) operated a small number of Fortresses in support of the bombing offensive for jamming German radar.

Four women pilots leaving their ship, "Pistol Packin' Mama", at the four-engine school at Lockbourne AAF, Ohio, during [WASP](http://en.wikipedia.org/wiki/Women_Airforce_Service_Pilots) training to ferry B-17 Flying Fortresses. L to R are Frances Green, Marget (Peg) Kirchner, Ann Waldner and Blanche Osborn. (U.S. Air Force photo)

**The USAAF**

The Air Corps (renamed [United States Army Air Forces](http://en.wikipedia.org/wiki/United_States_Army_Air_Forces) or USAAF in 1941), utilizing the B-17 and other bombers, bombed from high altitudes using the then-secret [Norden bombsight](http://en.wikipedia.org/wiki/Norden_bombsight), which was an optical electro-mechanical gyro-stabilized [analog computer](http://en.wikipedia.org/wiki/Analog_computer). The device was able to determine, from variables input by the bombardier, the point at which the aircraft's bombs should be released to hit the target. The bombardier essentially took over flight control of the aircraft during the bomb run, maintaining a level altitude during the final moments before release.

The USAAF began building up its air forces in Europe using B-17Es soon after entering the war. The first [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) units arrived in [High Wycombe, England](http://en.wikipedia.org/wiki/High_Wycombe%2C_England), on 12 May 1942, to form the 97th Bomb Group. On 17 August 1942, 18 B-17Es of the 97th, including *Yankee Doodle*, flown by Major [Paul Tibbets](http://en.wikipedia.org/wiki/Paul_Tibbets) and [Brigadier General](http://en.wikipedia.org/wiki/Brigadier_General) [Ira Eaker](http://en.wikipedia.org/wiki/Ira_Eaker), were escorted by RAF [Spitfires](http://en.wikipedia.org/wiki/Supermarine_Spitfire) on the first USAAF raid over Europe, against railroad [marshalling yards](http://en.wikipedia.org/wiki/Classification_yard) at [Rouen](http://en.wikipedia.org/wiki/Rouen)-Sotteville in France. The operation was a success, with only minor damage to two aircraft.

As the American bombing campaign grew in numbers and frequency, German interception efforts arose to respond to the bombers, such as the attempted bombing of Kiel on 13 June 1943, to the level where unescorted bombing missions became discouraged.

**Combined offensive**

Boeing B-17F [radar](http://en.wikipedia.org/wiki/Radar) bombing through clouds: [Bremen](http://en.wikipedia.org/wiki/Bremen), Germany, on 13 November 1943.

The two different strategies of the American and British Bomber commands were organized at the [Casablanca Conference](http://en.wikipedia.org/wiki/Casablanca_Conference_%281943%29) in January 1943. The resulting "[Combined Bomber Offensive](http://en.wikipedia.org/wiki/Combined_Bomber_Offensive)" would weaken the [*Wehrmacht*](http://en.wikipedia.org/wiki/Wehrmacht), destroy German morale and establish air superiority through [Operation Pointblank](http://en.wikipedia.org/wiki/Operation_Pointblank)'s destruction of German fighter strength in preparation of a ground offensive. The USAAF bombers would attack by day with British operations – chiefly against industrial cities – by night.

Operation Pointblank opened with attacks on targets in Western Europe. General [Ira C. Eaker](http://en.wikipedia.org/wiki/Ira_C._Eaker) and the Eighth Air Force placed highest priority on attacks on the German aircraft industry, especially fighter assembly plants, engine factories and ball-bearing manufacturers. Attacks began in April 1943 on key industrial plants in [Bremen](http://en.wikipedia.org/wiki/Bremen) and [Recklinghausen](http://en.wikipedia.org/wiki/Recklinghausen), however many of these targets were heavily fortified.

B-17F formation over [Schweinfurt](http://en.wikipedia.org/wiki/Schweinfurt), Germany, 17 August 1943

Since the airfield bombings were not appreciably reducing German fighter strength, additional B-17 groups were formed. Eaker ordered major missions deeper into Germany against important industrial targets. The 8th Air Force then targeted the ball-bearing factories in [Schweinfurt](http://en.wikipedia.org/wiki/Schweinfurt), hoping to cripple the war effort there. The [first raid](http://en.wikipedia.org/wiki/Schweinfurt-Regensburg_mission) on 17 August 1943 did not result in critical damage to the factories, with the 230 attacking B-17s being intercepted by an estimated 300 *Luftwaffe* fighters. The Germans shot down 36 aircraft with the loss of 200 men, and coupled with a raid earlier in the day against [Regensburg](http://en.wikipedia.org/wiki/Regensburg), a total of 60 B-17s were lost that day.

A second attempt on 14 October 1943 would later come to be known as "[Black Thursday](http://en.wikipedia.org/wiki/Second_Raid_on_Schweinfurt)". While the attack was successful at disrupting the entire works, severely curtailing work there for the remainder of the war, it was at an extreme cost. Of the 291 attacking Fortresses, 60 were shot down over Germany, five crashed on approach to Britain, and 12 more were scrapped due to damage — a total loss of 77 B-17s. One hundred and twenty-two bombers were damaged and needed repairs before their next flight. Out of 2,900 men in the crews, about 650 men did not return, although some survived as [prisoners of war](http://en.wikipedia.org/wiki/Prisoner_of_war). Only 33 bombers landed without damage. These losses were a result of concentrated attacks by over 300 German fighters.

B-17G of the 384th Bomb Group on the bomb run

These losses of air crews could not be sustained, and the USAAF, recognizing the vulnerability of heavy bombers operating alone to interceptors, suspended daylight bomber raids deep into Germany until the development of an escort fighter that could protect the bombers all the way from the United Kingdom to Germany and back. In response however, the German night fighting ability noticeably improved to counter the nighttime strikes, challenging the conventional knowledge of the cover of darkness. The [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) alone lost 176 bombers in October 1943. The Eighth Air Force was to suffer similar casualties on 11 January 1944 on missions to [Oschersleben](http://en.wikipedia.org/wiki/Oschersleben), [Halberstadt](http://en.wikipedia.org/wiki/Halberstadt) and [Brunswick](http://en.wikipedia.org/wiki/Braunschweig). [Lieutenant General](http://en.wikipedia.org/wiki/Lieutenant_general_%28United_States%29) [James Doolittle](http://en.wikipedia.org/wiki/Jimmy_Doolittle), commander of the Eighth, had ordered the mission to be cancelled as the weather deteriorated, but the lead units had already entered hostile air space and continued with the mission. Most of the escorts turned back or missed the rendezvous, as a result 60 B-17s were destroyed A third raid on Schweinfurt on 24 February 1944 highlighted what came to be known as "[Big Week](http://en.wikipedia.org/wiki/Big_Week)". The bombing missions of Big Week were directed against German aircraft production. German fighters would have to respond and the [North American P-51 Mustang](http://en.wikipedia.org/wiki/North_American_P-51_Mustang) and [Republic P-47 Thunderbolt](http://en.wikipedia.org/wiki/Republic_P-47_Thunderbolt) fighters (equipped with improved [drop tanks](http://en.wikipedia.org/wiki/Drop_tank) to extend their range) which were accompanying the American heavies all the way to and from the targets would engage them. The escort fighters reduced the loss rate to below seven percent, with only 247 B-17s lost in 3500 [sorties](http://en.wikipedia.org/wiki/Sortie) while taking part in the Big Week raids.

By September 1944, 27 of the 40 bomb groups of the Eighth Air Force and six of the 21 groups of the Fifteenth Air Force used B-17s. Losses to [flak](http://en.wikipedia.org/wiki/Flak) continued to take a high toll of heavy bombers through 1944, but by 27 April 1945, (two days after the last heavy bombing mission in Europe) the rate of aircraft loss was so low that replacement aircraft were no longer arriving and the number of bombers per bomb group was reduced. The Combined Bomber Offensive was effectively complete.

**Pacific Theater**

B-17C AAF S/N *40-2074* at [Hickam Field](http://en.wikipedia.org/wiki/Hickam_Field). As Capt. Raymond T. Swenson landed on 7 December 1941, gunfire set alight the flare storage box amidship, burning the plane in two. One crewman was killed by Zero attack.

On 7 December 1941, a group of 12 B-17s of the 38th (four B-17C) and 88th (eight B-17E) Reconnaissance Squadrons, en route to reinforce the Philippines, were flown into Pearl Harbor from [Hamilton Field](http://en.wikipedia.org/wiki/Hamilton_Field%2C_California), [California](http://en.wikipedia.org/wiki/California), arriving during the [Japanese attack](http://en.wikipedia.org/wiki/Attack_on_Pearl_Harbor). Leonard "Smitty" Smith Humiston, co-pilot on [First Lieutenant](http://en.wikipedia.org/wiki/First_Lieutenant) Robert H. Richards' B-17C, AAF S/N *40-2049*, reported that he thought the U.S. Navy was giving the flight a 21 gun salute to celebrate the arrival of the bombers, after which he realized that Pearl Harbor was under attack. The Fortress came under fire from Japanese fighter aircraft, though the crew was unharmed with the exception of one who suffered an abrasion on his hand. Enemy activity forced an abort from [Hickam Field](http://en.wikipedia.org/wiki/Hickam_Field) to [Bellows Field](http://en.wikipedia.org/wiki/Bellows_Field), where the aircraft overran the runway and into a ditch where it was then strafed. Although initially deemed repairable, *40-2049* (11th BG / 38th RS) suffered more than 200 bullet holes and never flew again. Ten of the 12 Fortresses survived the attack.

B-17E BO AAF S/N *41-9211*
*Typhoon McGoon II* of the 11th BG / 98th BS, taken in January 1943 in New Caledonia. Note the antennas mounted above the nose Plexiglas used for radar tracking of surface vessels.

By 1941, the [Far East Air Force](http://en.wikipedia.org/wiki/Far_East_Air_Force_%28United_States%29) (FEAF) based at [Clark Field](http://en.wikipedia.org/wiki/Clark_Air_Base) in the Philippines had 35 B-17s, with the War Department eventually planning to raise that to 165. When the FEAF received word of the [attack on Pearl Harbor](http://en.wikipedia.org/wiki/Attack_on_Pearl_Harbor), [General](http://en.wikipedia.org/wiki/General) [Lewis H. Brereton](http://en.wikipedia.org/wiki/Lewis_H._Brereton) sent his bombers and fighters on various patrol missions to prevent them from being caught on the ground. Brereton planned B-17 raids on Japanese air fields in [Formosa](http://en.wikipedia.org/wiki/Taiwan), in accordance with [Rainbow 5](http://en.wikipedia.org/wiki/Rainbow_5) war plan directives, but this was overruled by General [Douglas MacArthur](http://en.wikipedia.org/wiki/Douglas_MacArthur). A series of [disputed discussions and decisions](http://en.wikipedia.org/wiki/Battle_of_the_Philippines_%281941-42%29#Far_East_Air_Force_controversy), followed by several confusing and false reports of air attacks, delayed the authorization of the sortie. By the time that the B-17s and escorting [Curtiss P-40](http://en.wikipedia.org/wiki/Curtiss_P-40) fighters were about to get airborne, they were destroyed by Japanese bombers of the [11th Air Fleet](http://en.wikipedia.org/w/index.php?title=11th_Air_Fleet_(Japan)&action=edit&redlink=1). The FEAF lost fully half its aircraft during the first strike, and was all but destroyed over the next few days.

Another early World War II Pacific engagement on 10 December 1941 involved [Colin Kelly](http://en.wikipedia.org/wiki/Colin_Kelly) who reportedly crashed his B-17 into the [Japanese battleship *Haruna*](http://en.wikipedia.org/wiki/Japanese_battleship_Haruna), which was later acknowledged as a near bomb miss on the [heavy cruiser *Ashigara*](http://en.wikipedia.org/wiki/Japanese_cruiser_Ashigara). Nonetheless, this deed made him a celebrated [war hero](http://en.wikipedia.org/wiki/War_hero). Kelly's B-17C AAF S/N *40-2045* (19th BG / 30th BS) crashed about 6 mi (10 km) from Clark Field after he held the burning Fortress steady long enough for the surviving crew to bail out. Kelly was posthumously awarded the [Distinguished Service Cross](http://en.wikipedia.org/wiki/Distinguished_Service_Cross_%28United_States%29). Noted Japanese ace [Saburo Sakai](http://en.wikipedia.org/wiki/Saburo_Sakai) is credited with this kill, and in the process, gained respect for the ability of the Fortress to absorb punishment.

B-17D captured by Japanese army, with marks of Hinomaru

B-17s were used in early battles of the Pacific with little success, notably the [Battle of Coral Sea](http://en.wikipedia.org/wiki/Battle_of_Coral_Sea) and [Battle of Midway](http://en.wikipedia.org/wiki/Battle_of_Midway). While there, the [Fifth Air Force](http://en.wikipedia.org/wiki/Fifth_Air_Force) B-17s were tasked with disrupting the Japanese sea lanes. Air Corps doctrine dictated bombing runs from high altitude, but it was soon discovered that only one percent of their bombs hit targets. However, B-17s were operating at heights too great for most [A6M Zero](http://en.wikipedia.org/wiki/A6M_Zero) fighters to reach, and the B-17's heavy gun armament was easily more than a match for lightly protected Japanese planes.

On March 2, 1943, six B-17s of the 64th Squadron attacked a major Japanese troop convoy from 10,000 ft (3 km) during the early stages of the [Battle of the Bismarck Sea](http://en.wikipedia.org/wiki/Battle_of_the_Bismarck_Sea), off [New Guinea](http://en.wikipedia.org/wiki/New_Guinea), using [skip bombing](http://en.wikipedia.org/wiki/Skip_bombing) to sink three merchant ships including the *Kyokusei Maru*. A B-17 was shot down by a [New Britain](http://en.wikipedia.org/wiki/New_Britain)-based [A6M Zero](http://en.wikipedia.org/wiki/A6M_Zero), whose pilot then machine-gunned some of the B-17 crew members as they descended in parachutes and attacked others in the water after they landed. Later, 13 B-17s bombed the convoy from medium altitude, causing the ships to disperse and prolonging the journey. The convoy was subsequently all but destroyed by a combination of low level strafing runs by [Royal Australian Air Force](http://en.wikipedia.org/wiki/Royal_Australian_Air_Force) [Beau-fighters](http://en.wikipedia.org/wiki/Bristol_Beaufighter), and [skip bombing](http://en.wikipedia.org/wiki/Skip_bombing) by USAAF [North American B-25 Mitchells](http://en.wikipedia.org/wiki/North_American_B-25_Mitchell) at 100 ft (30 m), while B-17s claimed five hits from higher altitudes.

A peak of 168 B-17 bombers were in the Pacific theater in September 1942, with all groups converting to other types by mid-1943.

**Bomber defense**

Part of a USAAF stream of over 1,000 B-17s

Formation flying through dense [flak](http://en.wikipedia.org/wiki/Flak) over [Merseburg](http://en.wikipedia.org/wiki/Merseburg), Germany

Before the advent of long-range [fighter](http://en.wikipedia.org/wiki/Fighter_aircraft) escorts, B-17s had only their [.50 in (12.7 mm)](http://en.wikipedia.org/wiki/.50_BMG) [M2 Browning machine guns](http://en.wikipedia.org/wiki/M2_Browning_machine_gun) to rely on for defense during the bombing runs over Europe. As the war intensified, Boeing used feedback from aircrews to improve each new variant with increased armament and armor. The number of defensive guns increased from four 0.50 in (12.7 mm) machine guns and one 0.30 in (7.62 mm) nose machine gun in the B-17C, to thirteen 0.50 in (12.7 mm) machine guns in the B-17G. But because the bombers could not [maneuver](http://en.wikipedia.org/wiki/Air_combat_manoeuvring) when attacked by fighters, and during their final bomb run they needed to be flown straight and level, individual aircraft struggled to fend off a direct attack.

German training model on how to attack one of the *fliegendes Stachelschwein* B-17s

A 1943 survey by the Air Corps found that over half the bombers shot down by the Germans had left the protection of the main formation. To address this problem, the United States developed the bomb-group formation, which evolved into the staggered [combat box](http://en.wikipedia.org/wiki/Combat_box) formation where all the B-17s could safely cover any others in their formation with their machine guns, making a formation of the bombers a dangerous target to engage by enemy fighters. Luftwaffe "Jagdflieger" (fighter pilots) likened attacking a B-17 combat box formation to encountering a *fliegendes Stachelschwein*, or "flying porcupine". However, the use of this rigid formation meant that individual aircraft could not engage in evasive maneuvers: they had to always fly in a straight line, which made them vulnerable to the German [flak](http://en.wikipedia.org/wiki/Flak). Additionally, German fighter aircraft later used the tactic of high-speed strafing passes rather than engaging with individual aircraft to inflict damage with minimum risk.

As a result, the B-17s' loss rate was up to 25% on some early missions (60 of 291 B-17s were lost in combat on the second [Raid on Schweinfurt](http://en.wikipedia.org/wiki/Raid_on_Schweinfurt)), and it was not until the advent of effective long-range fighter escorts (particularly the [North American P-51 Mustang](http://en.wikipedia.org/wiki/North_American_P-51_Mustang)) resulting in the degradation of the *Luftwaffe* as an effective interceptor force between February and June 1944, that the B-17 became strategically potent.

The B-17 was noted for its ability to absorb battle damage, still reach its target and bring its crew home safely. Wally Hoffman, a B-17 pilot with the Eighth Air Force during World War II, said, "The plane can be cut and slashed almost to pieces by enemy fire and bring its crew home." [Martin Caidin](http://en.wikipedia.org/wiki/Martin_Caidin) reported one instance in which a B-17 suffered a midair collision with a Focke-Wulf Fw 190, losing an engine and suffering serious damage to both the starboard horizontal stabilizer and the vertical stabilizer, and being knocked out of formation by the impact. The airplane was reported as shot down by observers, but it survived and brought its crew home without injury. Its toughness more than compensated for its shorter range and lighter bomb load when compared to the Consolidated [B-24 Liberator](http://en.wikipedia.org/wiki/B-24_Liberator) or the British [Avro Lancaster](http://en.wikipedia.org/wiki/Avro_Lancaster) heavy bombers. Stories abound of B-17s returning to base with tails having been destroyed, with only a single engine functioning or even with large portions of wings having been damaged by [flak](http://en.wikipedia.org/wiki/Anti-aircraft_warfare). This durability, together with the large operational numbers in the [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) and the fame achieved by the "[Memphis Belle](http://en.wikipedia.org/wiki/Memphis_Belle_%28B-17%29)", made the B-17 a significant bomber aircraft of the war; however other factors such as combat effectiveness and political issues also contributed to the B-17's success.

The B-17 design went through eight major changes over the course of its production, culminating in the B-17G, differing from its immediate predecessor by the addition of a chin [turret](http://en.wikipedia.org/wiki/Gun_turret) with two .50 in (12.7 mm) caliber [M2 Browning machine guns](http://en.wikipedia.org/wiki/M2_Browning_machine_gun) under the nose. This eliminated the B-17's main defensive weakness in head-on attacks.

**The Luftwaffe**

A severely damaged B-17 continues to fly after an attacking [BF 109 fighter](http://en.wikipedia.org/wiki/Messerschmitt_Bf_109) collided with the aircraft.

After examining wrecked B-17s and B-24s, [*Luftwaffe*](http://en.wikipedia.org/wiki/Luftwaffe) officers discovered that on average it took around 20 hits with [20 mm (0.79 in)](http://en.wikipedia.org/wiki/MG_151_cannon) shells fired from the rear to bring them down. Pilots of average ability hit the bombers with only about two percent of the rounds they fired, so to obtain 20 hits, the average pilot had to fire one thousand 20 mm (0.79 in) rounds at a bomber. Early versions of the [Fw 190](http://en.wikipedia.org/wiki/Focke-Wulf_Fw_190), one of the best German interceptor fighters, were equipped with two 20 mm (0.79 in) [MG FF](http://en.wikipedia.org/wiki/MG_FF_cannon) cannons, which carried only 500 rounds, and later with the better [Mauser MG 151/20](http://en.wikipedia.org/wiki/MG_151_cannon) cannons, which had a longer effective range than the MG FF weapon. The German fighters found that when attacking from the front, where fewer defensive guns were pointed, it only took four or five hits to bring a bomber down. To address the Fw 190's shortcomings, the number of cannons fitted was doubled to four with a corresponding increase in the amount of ammunition carried, and in 1944, a further upgrade to [Rheinmetall](http://en.wikipedia.org/wiki/Rheinmetall)-[Borsig](http://en.wikipedia.org/wiki/Borsig)'s 30 mm (1.2 in) [MK 108 cannons](http://en.wikipedia.org/wiki/MK_108_cannon) was made, which could bring a bomber down in just a few hits.

A B-17F downed by a [Me 262](http://en.wikipedia.org/wiki/Messerschmitt_Me_262) jet fighter over Germany

The adoption by the *Luftwaffe* in mid-August 1943, as a "stand-off" style of offense, of the [*Werfer-Granate 21*](http://en.wikipedia.org/wiki/Nebelwerfer#Air-to-air_adaptation_.28Werfer-Granate_21_rocket.29) (Wfr. Gr. 21) rocket mortar, with one strut-mounted tubular launcher fixed under each wing panel on the *Luftwaffe*'s single engine fighters, and two under each wing panel on a few [Bf 110](http://en.wikipedia.org/wiki/Messerschmitt_Bf_110) daylight *Zerstörer* aircraft, had the promise of introducing a major weapon. However, due to the [ballistic drop](http://en.wikipedia.org/wiki/Bullet_drop) of the fired rocket, even with the usual strut mounting of the launcher fixing it in about a 15° upward orientation, and the low numbers of fighters fitted with the weapons, the Wfr. Gr. 21 never had a major effect on the combat box formations of Fortresses. Also, the attempts of the *Luftwaffe* to fit heavy-caliber *Bordkanone*-series 37, 50 and even 75 mm (2.95 in) cannon on twin engine aircraft such as the special [Ju 88P](http://en.wikipedia.org/wiki/Junkers_Ju_88) fighters, and even on one model of the [Me 410](http://en.wikipedia.org/wiki/Messerschmitt_Me_410) *Hornisse*, as anti-bomber weapons did not have much effect on the American strategic bomber offensive. The [Me 262](http://en.wikipedia.org/wiki/Messerschmitt_Me_262) had moderate success against the B-17 late in the war. With its usual nose-mounted armament of four [MK 108 cannons](http://en.wikipedia.org/wiki/MK_108_cannon), and with some examples later equipped with the [R4M rocket](http://en.wikipedia.org/wiki/R4M_rocket), fired from underwing racks, it could fire from outside the range of the bombers' .50 in (12.7 mm) defensive guns and bring an aircraft down with one hit.

Captured B-17F-27-BO in [*Luftwaffe*](http://en.wikipedia.org/wiki/Luftwaffe) colors, the USAAF-named "Wulf Hound", *41-24585*, of the 360th BS/303rd BG, missing in action 16 October 1942. Operated by [*Kampfgeschwader* 200](http://en.wikipedia.org/wiki/Kampfgeschwader_200). This was the first Block 27 airframe, with strengthened landing gear.

During World War II, after crash-landing or being forced down, approximately 40 B-17s were captured and refurbished by the *Luftwaffe* with about a dozen put back into the air. Given German markings, the captured B-17s were used to determine the airplane's vulnerabilities and to train German interceptor pilots in tactics. Others, with the cover designation Dornier Do 200, were used as long range transports by the special duties unit [*Kampfgeschwader* 200](http://en.wikipedia.org/wiki/Kampfgeschwader_200), carrying out agent drops and supplying secret airstrips in the Middle East and North Africa. They were chosen for these missions as more suitable for the role than available German aircraft and not in an attempt to deceive the Allies, being operated in full Luftwaffe markings. One of the B-17s of KG200, bearing *Luftwaffe* markings *A3+FB*, was interned by Spain when it landed at [Valencia](http://en.wikipedia.org/wiki/Valencia%2C_Spain) airport, 27 June 1944, and remained there for the rest of the war. Some B-17s kept their Allied markings and were used in attempts to infiltrate B-17 formations and report on their position and altitude. The practice was initially successful, but the Army Air Force combat aircrews quickly developed and established standard procedures to first warn off, and then fire upon any "stranger" trying to join a group's formation.

**Soviet Use**

The U.S. did not offer B-17s to the Soviet Union, however, at least 73 were used by the [Soviet Air Force](http://en.wikipedia.org/wiki/Soviet_Air_Force). These were aircraft that landed with mechanical trouble during the [shuttle bombing](http://en.wikipedia.org/wiki/Shuttle_bombing) raids over Germany, or had been damaged by a Luftwaffe raid in [Poltava](http://en.wikipedia.org/wiki/Poltava). The Soviets restored 23 to flying condition but they never saw combat. They were concentrated in the 890th bomber regiment of the 45th bomber division. In 1946 the regiment was assigned to the Kazan' factory in order to aid in the Soviet effort to reproduce the [Boeing B-29](http://en.wikipedia.org/wiki/Boeing_B-29_Superfortress) as the [Tupolev Tu-4](http://en.wikipedia.org/wiki/Tupolev_Tu-4).

**Postwar history**

**U.S. Air Force**

Rear interior of B-17

Following World War II, the B-17 was declared obsolete and the Army Air Forces retired most of its fleet. Flight crews ferried the bombers back across the Atlantic to the United States, where the majority were sold for scrap and melted down. Following its establishment as an independent service in 1947, the [United States Air Force](http://en.wikipedia.org/wiki/United_States_Air_Force) had B-17 Flying Fortresses (called **F-9**s: for *Fotorecon*, at first, later **RB-17**s) in service with the [Strategic Air Command](http://en.wikipedia.org/wiki/Strategic_Air_Command) (SAC) from 1946 through 1951. The USAF [Air Rescue Service](http://en.wikipedia.org/wiki/Air_Rescue_Service) of the [Military Air Transport Service](http://en.wikipedia.org/wiki/Military_Air_Transport_Service) (MATS) also operated SB-17s as so-called ["Dumbo"](http://en.wikipedia.org/wiki/Dumbo_%28air-sea_rescue%29) [air-sea rescue](http://en.wikipedia.org/wiki/Air-sea_rescue) aircraft during the late 1940s and early to mid-1950s.

By the late 1950s, the last B-17s in operational USAF service were QB-17 target drones, DB-17P drone controllers (first used in 1946 during [Operation Crossroads](http://en.wikipedia.org/wiki/Operation_Crossroads)), and a few VB-17 executive transport aircraft. The last operational mission flown by a USAF Fortress was conducted on 6 August 1959, when DB-17P *44-83684* directed QB-17G *44-83717* out of [Holloman Air Force Base](http://en.wikipedia.org/wiki/Holloman_Air_Force_Base), New Mexico, as a target for a Falcon air-to-air missile fired from an [F-101 Voodoo](http://en.wikipedia.org/wiki/F-101_Voodoo). A retirement ceremony was held several days later at Holloman, after which *44-83684* was retired to the [Military Aircraft Storage and Disposition Center](http://en.wikipedia.org/wiki/AMARC) (MASDC) at [Davis-Monthan Air Force Base](http://en.wikipedia.org/wiki/Davis-Monthan_Air_Force_Base), Arizona. Perhaps the most famous B-17, the [*Memphis Belle*](http://en.wikipedia.org/wiki/Memphis_Belle_%28aircraft%29), is being fastidiously restored to its wartime appearance by the [National Museum of the United States Air Force](http://en.wikipedia.org/wiki/National_Museum_of_the_United_States_Air_Force).

**U.S. Navy and U.S. Coast Guard**

During the last year of the war and shortly thereafter, the [United States Navy](http://en.wikipedia.org/wiki/United_States_Navy) acquired 48 ex-USAAF B-17s for patrol and air-sea rescue work. The first two ex-USAAF B-17s, a B-17F (later modified to B-17G standard) and a B-17G were obtained by the Navy for various development programs. At first, these aircraft operated under their original USAAF designations but on July 31, 1945, they were assigned the naval aircraft designation PB-1, a designation which had originally been used in 1925 for the [Boeing Model 50](http://en.wikipedia.org/wiki/Boeing_Model_50) experimental flying boat.

Under a program known as [**Cadillac II**](http://en.wikipedia.org/wiki/Cadillac_II), the U.S. Navy fitted the AN/APS-20 radar system onto the B-17G aircraft, giving it the designation PB-1W.

Thirty-two B-17Gs were used by the Navy under the designation PB-1W, the suffix -W standing for antisubmarine warfare. A large radome for a [S-band](http://en.wikipedia.org/wiki/S-band) [AN/APS-20](http://en.wikipedia.org/w/index.php?title=AN/APS-20&action=edit&redlink=1) search radar was fitted underneath the fuselage and additional internal fuel tanks were added for longer range, with the provision for additional underwing fuel tanks, while no armament was fitted. These aircraft were painted dark blue, a standard Navy paint scheme which had been adopted in late 1944. Many aircraft were flown directly from the factory to the Naval Aircraft Modification Unit at NAS Johnsville/NAS Warminster, Pennsylvania, during the summer of 1945, where the APS-20 search radar was fitted.

The first few PB-1Ws went to Patrol Bomber Squadron 101 (VPB-101) in April 1946. The PB-1W eventually evolved into an early warning aircraft by virtue of its APS-20 search radar. By 1947, PB-1Ws had been deployed to units operating with both the Atlantic and Pacific fleets. VPB-101 on the East Coast was redesignated [Air Test and Evaluation Squadron Four (VX-4)](http://en.wikipedia.org/wiki/VX-4) and assigned to [NAS Quonset Point](http://en.wikipedia.org/wiki/NAS_Quonset_Point), Rhode Island. VX-4 later became Airborne Early Warning Squadron Two (VW-2) in 1952 and transferred to [NAS Patuxent River](http://en.wikipedia.org/wiki/NAS_Patuxent_River), Maryland.

VW-2's primary mission was early warning, with secondary missions of antisubmarine warfare and hurricane reconnaissance. Airborne Early Warning Squadron One (VW-1) was established in 1952 with four PB-1Ws at [NAS Barbers Point](http://en.wikipedia.org/wiki/Kalaeloa_Airport), Hawaii with elements drawn from Fleet Composite Squadron Eleven (VC-11) at [NAS Miramar](http://en.wikipedia.org/wiki/NAS_Miramar) and Patrol Squadron 51 (VP-51) at [NAS North Island](http://en.wikipedia.org/wiki/NAS_North_Island) in San Diego, California. VW-1's mission set was similar to that of VW-2. PB-1Ws continued in USN service until 1955, gradually being phased out in favor of the Lockheed WV-2 (known in the USAF as the [EC-121](http://en.wikipedia.org/wiki/EC-121)), a military version of the Lockheed 1049 Constellation commercial airliner.

U.S. Coast Guard PB-1G stationed at Kodiak, Alaska.

In July 1945, 16 B-17s were transferred to the Coast Guard via the Navy; these aircraft were initially assigned Navy Bureau Numbers, but were delivered to the Coast Guard designated as *PB-1G*s beginning in July 1946. Coast Guard PB-1Gs were stationed throughout the hemisphere, with five at [Coast Guard Air Station Elizabeth City](http://en.wikipedia.org/wiki/Coast_Guard_Air_Station_Elizabeth_City), North Carolina, two at [CGAS San Francisco](http://en.wikipedia.org/wiki/San_Francisco_International_Airport), two at [NAS Argentia](http://en.wikipedia.org/wiki/NAS_Argentia), Newfoundland, one at [CGAS Kodiak](http://en.wikipedia.org/wiki/CGAS_Kodiak), Alaska, and one in Washington state. They were used primarily for air-sea rescue, but were also used for iceberg patrol duties and for photo mapping. Air-sea rescue PB-1Gs usually carried a droppable lifeboat underneath the fuselage. The chin turret was often replaced by a radome. The Coast Guard PB-1Gs served throughout the 1950s, the last example not being withdrawn from service until October 14, 1959.

**Variants/design stages**

Main article: [B-17 Flying Fortress variants](http://en.wikipedia.org/wiki/B-17_Flying_Fortress_variants)

|  |
| --- |
| Production numbers |
| **Variant** | **Produced** | **First flight** |
| Model 299 | 1 | 28 July 1935 |
| YB-17 | 13 | 2 December 1936 |
| YB-17A | 1 | 29 April 1938.  |
| B-17B | 39 | 27 June 1939 |
| B-17C | 38 | 21 July 1940 |
| B-17D | 42 | 3 February 1941 |
| B-17E | 512 | 5 September 1941 |
| B-17F | 3,405 | 30 May 1942  |
| B-17F-BO | 2,300 |  |
| B-17F-DL | 605 |  |
| B-17F-VE | 500 |  |
| B-17G | 8,680 |  |
| B-17G-BO | 4,035 |  |
| B-17G-DL | 2,395 |  |
| B-17G-VE | 2,250 |  |
| Grand total | 12,731 |  |

The B-17 went through several alterations in each of its design stages and variants. Of the 13 **YB-17**s ordered for service testing, 12 were used by the 2nd Bomb Group of Langley Field, Virginia, to develop heavy bombing techniques, and the 13th was used for flight testing at the Material Division at Wright Field, Ohio. Experiments on this aircraft led to the use of a turbo-supercharger, which would become standard on the B-17 line. A 14th plane, the **Y1B-17A**, originally destined for ground testing only, was upgraded with the turbocharger. When this aircraft had finished testing, it was re-designated the **B-17A**.

Blister turret of Model 299, not adopted for production

As the production line developed, Boeing engineers continued to improve upon the basic design. To enhance performance at slower speeds, the **B-17B** was altered to include larger [rudder](http://en.wikipedia.org/wiki/Rudder) and [flaps](http://en.wikipedia.org/wiki/Flap_%28aircraft%29). The **B-17C** changed from gun blisters to flush, oval-shaped windows. Most significantly, with the **B-17E** version, the fuselage was extended by 10 ft (3.0 m), a much larger vertical fin and rudder were incorporated into the original design, a gunner's position in the tail and an improved nose were added. The engines were upgraded to more powerful versions several times, and similarly, the gun stations were altered on numerous occasions to enhance their effectiveness.

B-17G nose detail

By the time the definitive **B-17G** appeared, the number of guns had been increased from seven to 13, the designs of the gun stations were finalized, and other adjustments were complete. The B-17G was the final version of the B-17, incorporating all changes made to its predecessor, the **B-17F**, and in total 8,680 were built, the last one (by Lockheed) on July 28 1945. Many B-17Gs were converted for other missions such as cargo hauling, engine testing and [reconnaissance](http://en.wikipedia.org/wiki/Reconnaissance_aircraft). Initially designated SB-17G, a number of B-17Gs were also converted for search-and-rescue duties, later to be redesignated **B-17H**.

Two versions of the B-17 were flown under different designations. These were the [XB-38](http://en.wikipedia.org/wiki/XB-38_Flying_Fortress) and the [YB-40](http://en.wikipedia.org/wiki/YB-40_Flying_Fortress). The **XB-38** was an engine test-bed for [Allison V-1710](http://en.wikipedia.org/wiki/Allison_V-1710) liquid-cooled engines, should the Wright engines normally used on the B-17 become unavailable. The only prototype XB-38 to fly crashed on its ninth flight, and the type was abandoned, the V-1710 being kept for fighters. The **YB-40** was a heavily armed modification of the standard B-17 used before the [P-51 Mustang](http://en.wikipedia.org/wiki/P-51_Mustang), an effective long-range fighter, became available to act as escort. Additional armament included an additional dorsal turret in the radio room, a chin turret (which went on to become standard with the B-17G) and twin .50 in (13 mm) guns in the waist positions. The ammunition load was over 11,000 rounds, making the YB-40 well over 10,000 lb (4,500 kg) heavier than a fully loaded B-17F. The YB-40s with their numerous heavy modifications had trouble keeping up with the lighter bombers once they had dropped their bombs, and so the project was abandoned and finally phased out in July 1943.

SB-17G-95DL *44-83722*
assigned to the 2nd ERS as a Search and Rescue aircraft

Late in World War II, in [Operation Aphrodite](http://en.wikipedia.org/wiki/Operation_Aphrodite), at least 25 B-17s were fitted with radio controls, loaded with 20,000 lb (9,100 kg) of high-explosives, dubbed "**BQ-7** Aphrodite missiles". Attacks on the V-site bunkers were also initiated by the Americans using radio controlled bombers packed with 25,000 lb (11,000 kg) of [Torpex](http://en.wikipedia.org/wiki/Torpex) and [TNT](http://en.wikipedia.org/wiki/Trinitrotoluene). Called Aphrodite drones, Operation CASTOR was begun on June 23, 1944, using the [388th Bombardment Group](http://en.wikipedia.org/wiki/388th_Bombardment_Group) at [Knettishall](http://en.wikipedia.org/wiki/RAF_Knettishall). An airfield in a sparsely populated area of [Norfolk](http://en.wikipedia.org/wiki/Norfolk) was chosen at [RAF Fersfield](http://en.wikipedia.org/wiki/RAF_Fersfield) (near [Winfarthing](http://en.wikipedia.org/wiki/Winfarthing)). The drone was usually a B-17 Fortress with a [B-34 Ventura](http://en.wikipedia.org/wiki/B-34_Ventura) being used to control the aircraft and crash it onto its target. The first four drones were sent to [Mimoyecques](http://en.wikipedia.org/wiki/Mimoyecques), [Siracourt](http://en.wikipedia.org/wiki/Siracourt), [Watten](http://en.wikipedia.org/wiki/Watten%2C_Nord) and [Wizernes](http://en.wikipedia.org/wiki/Wizernes) on August 4, causing little damage. On the 6th, two more B-17s were crashed on the [Watten](http://en.wikipedia.org/wiki/Watten%2C_Nord) site with little success. The project came to a sudden end with the unexplained mid-air explosion over the [Blyth](http://en.wikipedia.org/wiki/River_Blyth%2C_Suffolk) estuary of a [B-24 Liberator](http://en.wikipedia.org/wiki/B-24_Liberator), part of the [United States Navy](http://en.wikipedia.org/wiki/United_States_Navy)'s contribution as "Project Anvil", en route for [Heligoland](http://en.wikipedia.org/wiki/Heligoland) piloted by Lieutenant [Joseph P. Kennedy Jr.](http://en.wikipedia.org/wiki/Joseph_P._Kennedy_Jr.), future U.S. president [John F. Kennedy](http://en.wikipedia.org/wiki/John_F._Kennedy)'s elder brother. Blast damage was caused over a radius of 5 miles (8.0 km). British authorities were anxious that no similar accidents should again occur. Since few (if any) BQ-7s hit their target, the Aphrodite project was scrapped in early 1945.

During and after World War II, a number of weapons were tested and used operationally on B-17s. Some of these weapons included "razons" (radio-guided) glide bombs, and [Republic-Ford JB-2s](http://en.wikipedia.org/wiki/Republic-Ford_JB-2), also nicknamed "Thunderbugs" (American [reverse-engineered](http://en.wikipedia.org/wiki/Reverse-engineered) models of the German [V-1](http://en.wikipedia.org/wiki/V-1_%28flying_bomb%29) Buzz Bomb). A much-used traveling airborne shot of a V-1/JB-2 launch in [World War II](http://en.wikipedia.org/wiki/World_War_II) documentaries was filmed from a USAF [A-26](http://en.wikipedia.org/wiki/A-26_Invader) of the Air Proving Grounds, [Eglin Air Force Base](http://en.wikipedia.org/wiki/Eglin_Air_Force_Base), launched from Santa Rosa Island, Florida. In the late 1950s, the last B-17s in United States Air Force service were **QB-17** drones and **DB-17P** drone controllers, plus a few polished **VB-17** squadron "hacks" (a 1953 request by the [Wright Air Development Center](http://en.wikipedia.org/w/index.php?title=Wright_Air_Development_Center&action=edit&redlink=1) to redesignate the QB-17s to **Q-7** was turned down by [Air Research & Development Command](http://en.wikipedia.org/w/index.php?title=Air_Research_%26_Development_Command&action=edit&redlink=1)). The last operational mission flown by a USAF Fortress was conducted on 6 August 1959, when **DB-17P** *44-83684* directed **QB-17G** *44-83717* out of [Holloman Air Force Base](http://en.wikipedia.org/wiki/Holloman_Air_Force_Base) as a target for a [Falcon](http://en.wikipedia.org/wiki/Falcon) air-to-air missile fired from an [F-101 Voodoo](http://en.wikipedia.org/wiki/F-101_Voodoo) fighter. A retirement ceremony was held several days later at Holloman, after which *44-83684* was retired to the Military Aircraft Storage and Disposition Center (MASDC) at [Davis-Monthan Air Force Base](http://en.wikipedia.org/wiki/Davis-Monthan_Air_Force_Base).

**Operators**

Military operators of the B-17

Civil operators of the B-17

Main article: [List of B-17 Flying Fortress operators](http://en.wikipedia.org/wiki/List_of_B-17_Flying_Fortress_operators)

The B-17 was a versatile aircraft, serving in dozens of USAAF units in theaters of combat throughout World War II, and in non-bomber roles for the RAF. Its main use was in [Europe](http://en.wikipedia.org/wiki/European_Theatre_of_World_War_II), where its shorter range and smaller bombload relative to other aircraft available did not hamper it as much as in the [Pacific Theater](http://en.wikipedia.org/wiki/Pacific_Theater_of_Operations). Peak USAAF inventory (in August 1944) was 4,574 worldwide.

* [Argentina](http://en.wikipedia.org/wiki/Argentina)

* [Bolivia](http://en.wikipedia.org/wiki/Bolivia)

* [Brazil](http://en.wikipedia.org/wiki/Brazil)

* [Canada](http://en.wikipedia.org/wiki/Canada)

* [Colombia](http://en.wikipedia.org/wiki/Colombia)

* [Denmark](http://en.wikipedia.org/wiki/Denmark)

* [Dominican Republic](http://en.wikipedia.org/wiki/Dominican_Republic)

* [France](http://en.wikipedia.org/wiki/France)

* [Germany](http://en.wikipedia.org/wiki/Germany)

* [Iran](http://en.wikipedia.org/wiki/Iran)

* [Israel](http://en.wikipedia.org/wiki/Israel)

* [Japan](http://en.wikipedia.org/wiki/Japan)

* [Mexico](http://en.wikipedia.org/wiki/Mexico)

* [Nicaragua](http://en.wikipedia.org/wiki/Nicaragua)

* [Peru](http://en.wikipedia.org/wiki/Peru)

* [Portugal](http://en.wikipedia.org/wiki/Portugal)

* [South Africa](http://en.wikipedia.org/wiki/South_Africa)

* [Taiwan](http://en.wikipedia.org/wiki/Republic_of_China)

* [Soviet Union](http://en.wikipedia.org/wiki/Soviet_Union)

* [Sweden](http://en.wikipedia.org/wiki/Sweden)

* [United Kingdom](http://en.wikipedia.org/wiki/United_Kingdom)

* [United States](http://en.wikipedia.org/wiki/United_States)

**Survivors**

Main article: [Boeing B-17 survivors](http://en.wikipedia.org/wiki/Boeing_B-17_survivors)

There are a total of 53 surviving airframes worldwide:

* 15 active flying
* 9 on static display
* 2 currently undergoing restoration to fly
* 3 currently undergoing restoration for display
* 5 in storage
* 19 partial airframes/hulks

**Fortresses as a symbol**

The B-17's capacity to repel enemy attacks and still inflict heavy damage to German military capability and production centers is imaginatively rendered in this caricature.

Over Germany, B-17 Flying Fortresses from the 398th Bombardment Group fly a bombing run to [Neumünster](http://en.wikipedia.org/wiki/Neum%C3%BCnster), Germany, on 13 April 1945.

B-17G-80BO [*43-38172*](http://www.398th.org/Images/Images_Aircraft_B-17/Aircraft/43-38172-3O-P_19441015_JBk.html) 8th AF 398th BG 601st BS damaged on a bombing mission over [Cologne](http://en.wikipedia.org/wiki/Cologne), Germany, on 15 October 1944. Pilot 1st Lt. Lawrence De Lancey brought the wounded Fortress back to [Nuthampstead](http://en.wikipedia.org/wiki/Nuthampstead), UK. Notice the upwards effect of the anti-aircraft shell; the toggler S/Sgt. George E. Abbott was killed.

The B-17 Flying Fortress has become, for many reasons, an icon of American power and a symbol of its Air Force. During the 1930s, the USAAC, as articulated by then-Major General [Frank Maxwell Andrews](http://en.wikipedia.org/wiki/Frank_Maxwell_Andrews) and the [Air Corps Tactical School](http://en.wikipedia.org/wiki/Air_Corps_Tactical_School), touted the bomber as a strategic weapon. General [Henry H. Arnold](http://en.wikipedia.org/wiki/Henry_H._Arnold), Chief of the Air Corps, recommended the development of bigger aircraft with better performance and the Tactical School agreed completely.

When the Model 299 was rolled out on 28 July 1935, bristling with multiple [machine gun](http://en.wikipedia.org/wiki/Machine_gun) installations, Richard Williams, a reporter for the [*Seattle Times*](http://en.wikipedia.org/wiki/The_Seattle_Times) coined the name "Flying Fortress" with his comment "Why, it's a flying fortress!". Boeing was quick to see the value of the name and had it trademarked for use. In 1943, [Consolidated Aircraft](http://en.wikipedia.org/wiki/Consolidated_Aircraft) commissioned a poll to see "to what degree the public is familiar with the names of the Liberator and the Flying Fortress." Of 2,500 men in cities where Consolidated ads had been run in newspapers, 73% had heard of the [B-24 Liberator](http://en.wikipedia.org/wiki/B-24_Liberator), while 90% knew of the B-17.

After the initial B-17s were delivered to the Air Corps 2nd Bombardment Group, they were used on promotional flights emphasizing its great range and navigational precision. In January 1938, group commander [Colonel](http://en.wikipedia.org/wiki/Colonel_%28United_States%29) [Robert Olds](http://en.wikipedia.org/wiki/Robert_Olds) flew a YB-17 from the east to west coast, setting a transcontinental record of 13 hours 27 minutes. He also broke the west-to-east coast record on the return trip, averaging 245 mph (394 km/h) in 11 hours 1 minute. Six bombers of the 2nd Bombardment group took off from [Langley Field](http://en.wikipedia.org/wiki/Langley_Field) on 15 February 1938 as part of a good will flight to [Buenos Aires, Argentina](http://en.wikipedia.org/wiki/Buenos_Aires%2C_Argentina). Covering 12,000 miles (19,000 km) they returned on 27 February, with seven aircraft setting off on a flight to [Rio de Janeiro](http://en.wikipedia.org/wiki/Rio_de_Janeiro), Brazil, three days later. In a well-publicized mission on May 12 of the same year, three B-17s, "intercepted" and took photographs of the Italian ocean liner [SS *Rex*](http://en.wikipedia.org/wiki/SS_Rex) 610 miles (980 km) off the Atlantic coast.

During the war, the largest offensive bombing force, the [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force), had an open preference for the B-17. [Lieutenant General](http://en.wikipedia.org/wiki/Lieutenant_General) [Jimmy Doolittle](http://en.wikipedia.org/wiki/Jimmy_Doolittle) wrote about his preference for equipping the Eighth with B-17s, citing the logistical advantage in keeping fielded forces down to a minimum number of aircraft types with their unique servicing and spares. For this reason, he wanted B-17 bombers and P-51 fighters for the Eighth. His views were supported by Eighth Air Force statisticians, whose studies purportedly showed that Fortresses had utility and survivability much greater than that of the B-24. Making it back to base on multiple occasions despite extensive battle damage, its durability took on mythical proportions; stories and photos of B-17s surviving battle damage were widely circulated during the war. Despite an inferior performance and bombload compared to the more numerous [B-24 Liberator](http://en.wikipedia.org/wiki/B-24_Liberator), a survey of [Eighth Air Force](http://en.wikipedia.org/wiki/Eighth_Air_Force) crews showed a much higher rate of satisfaction in the B-17.

[Hollywood](http://en.wikipedia.org/wiki/Classical_Hollywood_cinema) featured the airplane in its movies, such as [*Twelve O'Clock High*](http://en.wikipedia.org/wiki/Twelve_O%27Clock_High), with [Gregory Peck](http://en.wikipedia.org/wiki/Gregory_Peck). This film was made with the full cooperation of the [United States Air Force](http://en.wikipedia.org/wiki/United_States_Air_Force) and made use of actual combat footage. In 1964, the movie was made into a [television show of the same name](http://en.wikipedia.org/wiki/Twelve_O%27Clock_High_%28TV_series%29), and ran for three years. The B-17 also appeared in the 1938 movie [*Test Pilot*](http://en.wikipedia.org/wiki/Test_Pilot_%28film%29) with [Clark Gable](http://en.wikipedia.org/wiki/Clark_Gable) and [Spencer Tracy](http://en.wikipedia.org/wiki/Spencer_Tracy), with Clark Gable in [*Command Decision*](http://en.wikipedia.org/wiki/Command_Decision_%28film%29) in 1948, in [*Tora! Tora! Tora!*](http://en.wikipedia.org/wiki/Tora%21_Tora%21_Tora%21) in 1970, and in [*Memphis Belle*](http://en.wikipedia.org/wiki/Memphis_Belle_%28film%29) with [Matthew Modine](http://en.wikipedia.org/wiki/Matthew_Modine), [Eric Stoltz](http://en.wikipedia.org/wiki/Eric_Stoltz), [Billy Zane](http://en.wikipedia.org/wiki/Billy_Zane), and [Harry Connick, Jr.](http://en.wikipedia.org/wiki/Harry_Connick%2C_Jr.) in 1990. The most famous B-17, the [*Memphis Belle*](http://en.wikipedia.org/wiki/Memphis_Belle_%28B-17%29), toured the U.S. with its crew to reinforce national morale (and to sell [War Bonds](http://en.wikipedia.org/wiki/War_Bonds)), and starred in a USAAF documentary, [*Memphis Belle: A Story of a Flying Fortress*](http://en.wikipedia.org/wiki/Memphis_Belle%3A_A_Story_of_a_Flying_Fortress).

**Notable B-17s**

B-17G *Shoo Baby*

* [Aluminum Overcast](http://en.wikipedia.org/wiki/Aluminum_Overcast) -- flying example
* [Yankee Lady](http://en.wikipedia.org/w/index.php?title=Yankee_Lady&action=edit&redlink=1) -- flying example Yankee Air Force
* [Liberty Belle](http://en.wikipedia.org/wiki/Liberty_Belle_%28B-17%29) – former engine testbed restored as flying example
* [Memphis Belle](http://en.wikipedia.org/wiki/Memphis_Belle_%28aircraft%29)
* [My Gal Sal](http://en.wikipedia.org/wiki/My_Gal_Sal_%28B-17%29)
* [Murder Inc.](http://en.wikipedia.org/w/index.php?title=Murder_Inc._(aircraft)&action=edit&redlink=1) — A B-17 bombardier wearing the name of the B-17 "Murder Inc." on his jacket was used for propaganda in German newspapers
* [Nine-O-Nine](http://en.wikipedia.org/wiki/Nine-O-Nine)
* [Old 666](http://en.wikipedia.org/wiki/Old_666)
* [Piccadilly Lilly II](http://en.wikipedia.org/wiki/Piccadilly_Lilly_II)
* [(The) Pink Lady](http://en.wikipedia.org/wiki/The_Pink_Lady_%28B-17G%29)
* [Sally B](http://en.wikipedia.org/wiki/Sally_B) – flying example
* [Sentimental Journey](http://en.wikipedia.org/wiki/Sentimental_Journey_%28aircraft%29)
* [Shoo Baby](http://en.wikipedia.org/wiki/Shoo_Shoo_Baby_%28aircraft%29)
* [Swamp Ghost](http://en.wikipedia.org/wiki/Swamp_Ghost)
* [(The) Swoose](http://en.wikipedia.org/wiki/The_Swoose)
* [Texas Raiders](http://en.wikipedia.org/wiki/Texas_Raiders) -- flying example Commemorative Air Force
* [Thunderbird](http://en.wikipedia.org/wiki/Thunderbird_%28B-17%29)
* Ye Olde Pub – the B-17 that [Franz Stigler](http://en.wikipedia.org/wiki/Franz_Stigler) did not shoot down, as memorialized in "*A Higher Call*" by John D. Shaw

**Noted B-17 pilots and crew members**

[Maynard H. Smith](http://en.wikipedia.org/wiki/Maynard_Harrison_Smith) receiving Medal of Honor from [War Secretary](http://en.wikipedia.org/wiki/United_States_Secretary_of_War), [Henry L. Stimson](http://en.wikipedia.org/wiki/Henry_L._Stimson).

[Forrest L. Vosler](http://en.wikipedia.org/wiki/Forrest_L._Vosler) receiving Medal of Honor from President Roosevelt.

L–R, [Nancy Love](http://en.wikipedia.org/wiki/Nancy_Harkness_Love), pilot and [Betty (Huyler) Gillies](http://en.wikipedia.org/wiki/Betty_Gillies), co-pilot, the first women to fly the Boeing B-17 Flying Fortress heavy bomber

Nuthampstead, England. Aircraft mechanics with the 398th Bombardment Group change a B-17 Flying Fortress engine. During the group's stay in England from May 1944 to April 1945, the 398th flew 195 missions and lost 292 men and 70 B-17 aircraft in combat.

**Medal of Honor awards**

Many B-17 crew members received military honors and 17 received the [Medal of Honor](http://en.wikipedia.org/wiki/Medal_of_Honor), the highest military decoration awarded by the United States:

* Brigadier General [Frederick Castle](http://en.wikipedia.org/wiki/Frederick_Walker_Castle) (flying as co-pilot) - awarded posthumously for remaining at controls so others could escape damaged aircraft.
* 2nd Lt [Robert Femoyer](http://en.wikipedia.org/wiki/Robert_Edward_Femoyer) (navigator) - awarded posthumously
* 1st Lt [Donald J. Gott](http://en.wikipedia.org/wiki/Donald_J._Gott) (pilot) - awarded posthumously
* 2nd Lt [David R. Kingsley](http://en.wikipedia.org/wiki/David_R._Kingsley) (bombardier) - awarded posthumously for tending to injured crew and giving up his parachute to another
* 1st Lt [William R. Lawley, Jr.](http://en.wikipedia.org/wiki/William_R._Lawley%2C_Jr.) - "heroism and exceptional flying skill"
* Sgt [Archibald Mathies](http://en.wikipedia.org/wiki/Archibald_Mathies) (engineer-gunner) - awarded posthumously
* 1st Lt [Jack W. Mathis](http://en.wikipedia.org/wiki/Jack_W._Mathis) (bombardier) - posthumously, the first airman in the European theater to be awarded the Medal of Honor
* 2nd Lt [William E. Metzger, Jr.](http://en.wikipedia.org/wiki/William_E._Metzger%2C_Jr.) (Co-pilot) - awarded posthumously
* 1st Lt [Edward Michael](http://en.wikipedia.org/wiki/Edward_Michael)
* 1st Lt [John C. Morgan](http://en.wikipedia.org/wiki/John_C._Morgan)
* Capt [Harl Pease](http://en.wikipedia.org/wiki/Harl_Pease) (awarded posthumously)
* 2nd Lt [Joseph Sarnoski](http://en.wikipedia.org/wiki/Joseph_Sarnoski) (awarded posthumously)
* S/Sgt [Maynard H. Smith](http://en.wikipedia.org/wiki/Maynard_Harrison_Smith) (gunner)
* 1st Lt [Walter E. Truemper](http://en.wikipedia.org/wiki/Walter_E._Truemper) (awarded posthumously)
* S/Sgt [Forrest L. Vosler](http://en.wikipedia.org/wiki/Forrest_L._Vosler) (radio operator)
* Brig Gen [Kenneth Walker](http://en.wikipedia.org/wiki/Kenneth_Walker) (not part of crew at time) - awarded posthumously
* Maj [Jay Zeamer, Jr.](http://en.wikipedia.org/wiki/Jay_Zeamer%2C_Jr.) (pilot) - earned on unescorted reconnaissance mission

**Other military achievements or events**

* [Allison C. Brooks](http://en.wikipedia.org/wiki/Allison_Brooks) (1917–2006): Was awarded numerous military decorations, and was ultimately promoted to the rank of Major General and served in active duty until 1971.
* 1st Lt [Emil "Mickey" Cohen](http://en.wikipedia.org/w/index.php?title=Emil_%22Mickey%22_Cohen&action=edit&redlink=1) (1924–2008): Nicknamed "The Kid". Flew with the 447th Bombardment Group, 709th squadron, out of Rattlesden, England. Piloted the Barbara Jane and two missions on The Blue Hen Chick. Was the youngest B-17 pilot in the 8th Air Force and may have been the youngest bomber pilot in the U.S. Army Air Forces.
* 1st Lt [Eugene Emond](http://en.wikipedia.org/wiki/Eugene_Emond) (1921–1998): Lead Pilot for Man O War II Horsepower Limited received the Distinguished Flying Cross, Air Medal with three Oak Leaf Clusters, American Theater Ribbon and Victory Ribbon. Was part of D-Day and witnessed one of the first German jets when a ME-262 flew through his formation over Germany: one of the youngest bomber pilots in the U.S. Army Air Forces.
* Captain [Werner G. Goering](http://en.wikipedia.org/wiki/Werner_G._Goering): American-born nephew of the [Nazi](http://en.wikipedia.org/wiki/Nazism) Commander of the *Luftwaffe* in World War II, [Hermann Göring](http://en.wikipedia.org/wiki/Hermann_G%C3%B6ring).
* [Immanuel J. Klette](http://en.wikipedia.org/wiki/Immanuel_J._Klette) (1918–1988): Second-generation German-American whose 91 combat missions were the most flown by any Eighth Air Force pilot in World War II.
* [Colin Kelly](http://en.wikipedia.org/wiki/Colin_Kelly) (1915–1941): Pilot of the first U.S. B-17 lost in action.
* Col [Frank Kurtz](http://en.wikipedia.org/wiki/Frank_Kurtz) (1911–1996): The USAAF's most decorated pilot of World War II; Commander of the 463rd Bombardment Group (Heavy), 15th Air Force, Celone Field, Foggia, Italy; Clark Field Philippines attack survivor; [Olympic](http://en.wikipedia.org/wiki/Olympic_Games) bronze medalist in diving (1932), 1944–1945; father of actress [Swoosie Kurtz](http://en.wikipedia.org/wiki/Swoosie_Kurtz).
* Gen [Curtis LeMay](http://en.wikipedia.org/wiki/Curtis_LeMay) (1906–1990): Became head of the [Strategic Air Command](http://en.wikipedia.org/wiki/Strategic_Air_Command) and head of the USAF.
* Lt Col [Nancy Love](http://en.wikipedia.org/wiki/Nancy_Harkness_Love) (1914–1976) and [Betty (Huyler) Gillies](http://en.wikipedia.org/wiki/Betty_Gillies) (1908–1998): The first women to be certified to fly the B-17, in 1943.
* Col [Robert K. Morgan](http://en.wikipedia.org/wiki/Robert_K._Morgan) (1918–2004): Pilot of *Memphis Belle*.
* Lt Col [Robert Rosenthal](http://en.wikipedia.org/wiki/Robert_Rosenthal_%28USAF%29) (1917–2007): Commanded the only surviving B-17, "Rosie's Riveters", of a US 8th Air Force raid by the 100th Bomb Group on [Münster](http://en.wikipedia.org/wiki/M%C3%BCnster) in 1943, earned sixteen medals for gallantry (including one each from Britain and France), and led the raid on Berlin on February 3, 1945, that is likely to have ended the life of [Roland Freisler](http://en.wikipedia.org/wiki/Roland_Freisler), the [Third Reich](http://en.wikipedia.org/wiki/Third_Reich)'s infamous "hanging judge".
* Brig Gen [Paul Tibbets](http://en.wikipedia.org/wiki/Paul_Tibbets) (1915–2007): Flew with the 97th Bombardment Group (Heavy) with both the 8th Air Force in England and the 12th Air Force in North Africa; later pilot of the B-29 [Enola Gay](http://en.wikipedia.org/wiki/Enola_Gay) dropping the atomic bomb on [Hiroshima](http://en.wikipedia.org/wiki/Hiroshima), Japan.
* [Robert Webb](http://en.wikipedia.org/wiki/Robert_Webb_%28pilot%29) (1922–2002): One of the youngest bomber pilots in the U.S. Army Air Forces, received the Distinguished Flying Cross with seven Oak Leaf Clusters.

**Civilian achievements or events**

* [Martin Caidin](http://en.wikipedia.org/wiki/Martin_Caidin) (1927–1997): Author of [*Cyborg*](http://en.wikipedia.org/wiki/Cyborg_%28novel%29), the story that formed the basis of [*The Six Million Dollar Man*](http://en.wikipedia.org/wiki/The_Six_Million_Dollar_Man) wrote the saga of the last transatlantic formation flight of B-17s ever made, *Everything But the Flak*.
* [Clark Gable](http://en.wikipedia.org/wiki/Clark_Gable) (1901–1960): [Academy Award](http://en.wikipedia.org/wiki/Academy_Award)-winning film actor, five missions as waist gunner with several groups from May to September 1943, including the B-17 *Eight Ball* of the 359th Bomb Squadron (351st Bomb Group).
* [Tom Landry](http://en.wikipedia.org/wiki/Tom_Landry) (1924–2000): American football player and coach, flew 30 missions over Europe in 1944–45 as a B-17 pilot with the 493rd Bomb Group, surviving a crash landing in Czechoslovakia. (His older brother Robert died in a B-17 crash)

Clark Gable with 8th AF B-17F with pre-Cheyenne tail position, in Britain, 1943

* [Norman Lear](http://en.wikipedia.org/wiki/Norman_Lear): Radio operator, with the 463rd Bombardment Group (Heavy), 15th Air Force, Celone Field, Foggia, Italy; television producer of American sitcoms [*Sanford and Son*](http://en.wikipedia.org/wiki/Sanford_and_Son), [*Maude*](http://en.wikipedia.org/wiki/Maude_%28TV_series%29) and [*All in the Family*](http://en.wikipedia.org/wiki/All_in_the_Family), among others.
* [Gene Roddenberry](http://en.wikipedia.org/wiki/Gene_Roddenberry) (1921–1991): Creator of [*Star Trek*](http://en.wikipedia.org/wiki/Star_Trek); flew B-17s for the 394th Bomb Squadron, 5th Bomb Group (H), in the Pacific theater.
* [Robert Rosenthal](http://en.wikipedia.org/wiki/Robert_Rosenthal_%28USAF%29) (1917–2007): Assistant to the U.S. prosecutor at the [Nuremberg Trials](http://en.wikipedia.org/wiki/Nuremberg_Trials), where he interrogated [Hermann Göring](http://en.wikipedia.org/wiki/Hermann_G%C3%B6ring), pilot with the 100th Bomb Group.
* Brigadier General [Robert Lee Scott, Jr.](http://en.wikipedia.org/wiki/Robert_Lee_Scott%2C_Jr.) (1908–2006): Best known for his autobiography *God is My Co-Pilot*, about his exploits in World War II with the Flying Tigers and the United States Army Air Forces in China and Burma.
* [James Stewart](http://en.wikipedia.org/wiki/James_Stewart_%28actor%29) (1908–1997): Academy Award-winning film actor, instructed in B-17s before flying 20 combat missions in B-24s with the 8th Air Force, England; retired from Air Force Reserve as a Brigadier General.
* [Bert Stiles](http://en.wikipedia.org/wiki/Bert_Stiles) (1920–1944): [91st Bomb Group](http://en.wikipedia.org/wiki/91st_Bomb_Group) co-pilot from March to October 1944, short-story author, killed in action flying a [P-51](http://en.wikipedia.org/wiki/P-51_Mustang) on a second tour.
* [Bruce Sundlun](http://en.wikipedia.org/wiki/Bruce_Sundlun) (1920– ): [384th Bomb Group](http://en.wikipedia.org/wiki/384th_Bomb_Group) Pilot of B-17F *Damn Yankee* avoided capture after being shot down over [Jabbeke, Belgium](http://en.wikipedia.org/wiki/Jabbeke), 1 December 1943 to become a lawyer, businessman and Governor of [Rhode Island](http://en.wikipedia.org/wiki/Rhode_Island) 1991–95.
* [Smokey Yunick](http://en.wikipedia.org/wiki/Smokey_Yunick) (1923–2001): Award-winning motorsports car designer and premier [NASCAR](http://en.wikipedia.org/wiki/NASCAR) crew chief flew 50 missions as a B-17 pilot with the 97th Bombardment Group (Heavy) of the 15th Air Force, out of Amendola Airfield, Foggia, Italy.

**Specifications (B-17G)**

*Data from* The Encyclopedia of World Aircraft

**General characteristics**

* **Crew:** 10: Pilot, co-pilot, navigator, bombardier/nose gunner, flight engineer-top turret gunner, radio operator, waist gunners (2), [ball turret](http://en.wikipedia.org/wiki/Ball_Turret) gunner, tail gunner
* **Length:** 74 ft 4 in (22.66 m)
* [**Wingspan**](http://en.wikipedia.org/wiki/Wingspan)**:** 103 ft 9 in (31.62 m)
* **Height:** 19 ft 1 in (5.82 m)
* **Wing area:** 1,420 sq ft (131.92 m2)
* [**Airfoil**](http://en.wikipedia.org/wiki/Airfoil)**:** [NACA 0018](http://en.wikipedia.org/wiki/NACA_airfoil) / NACA 0010
* [**Aspect ratio**](http://en.wikipedia.org/wiki/Aspect_ratio)**:** 7.57
* [**Empty weight**](http://en.wikipedia.org/wiki/Manufacturer%27s_Weight_Empty)**:** 36,135 [lb](http://en.wikipedia.org/wiki/Pound_%28mass%29) (16,391 kg)
* **Loaded weight:** 54,000 lb (24,500 kg)
* [**Max takeoff weight**](http://en.wikipedia.org/wiki/Maximum_Takeoff_Weight)**:** 65,500 lb (29,700 kg)
* **Powerplant:** 4× [Wright R-1820](http://en.wikipedia.org/wiki/Wright_R-1820)-97 "Cyclone" turbosupercharged [radial engines](http://en.wikipedia.org/wiki/Radial_engine), 1,200 [hp](http://en.wikipedia.org/wiki/Horsepower) (895 kW) each

**Performance**

* [**Maximum speed**](http://en.wikipedia.org/wiki/V_speeds#Vno)**:** 287 mph (249 [kn](http://en.wikipedia.org/wiki/Knot_%28speed%29), 462 km/h)
* [**Cruise speed**](http://en.wikipedia.org/wiki/V_speeds#Vc)**:** 182 mph (158 kn, 293 km/h)
* [**Range**](http://en.wikipedia.org/wiki/Range_%28aircraft%29)**:** 2,000 mi (1,738 [nmi](http://en.wikipedia.org/wiki/Nautical_mile), 3,219 km) with 2,700 kg (6,000 lb) bombload
* [**Service ceiling**](http://en.wikipedia.org/wiki/Ceiling_%28aeronautics%29)**:** 35,600 ft (10,850 m)
* [**Rate of climb**](http://en.wikipedia.org/wiki/Rate_of_climb)**:** 900 ft/min (4.6 m/s)
* [**Wing loading**](http://en.wikipedia.org/wiki/Wing_loading)**:** 38.0 lb/sq ft (185.7 kg/m2)
* [**Power/mass**](http://en.wikipedia.org/wiki/Power-to-weight_ratio)**:** 0.089 hp/lb (150 W/kg)

**Armament**

* **Guns:** 13 × .50 in (12.7 mm) [M2 Browning machine guns](http://en.wikipedia.org/wiki/M2_Browning_machine_gun) in 4 turrets in dorsal, ventral, nose and tail, 2 in waist positions, 2 beside cockpit and 1 in the lower dorsal position
* **Bombs:**
	+ **Short range missions (<400 mi):** 8,000 lb (3,600 kg)
	+ **Long range missions (≈800 mi):** 4,500 lb (2,000 kg)
	+ **Overload:** 17,600 lb (7,800 kg)

**See also**

|  |  |
| --- | --- |
|  | [***Military of the United States portal***](http://en.wikipedia.org/wiki/Portal%3AMilitary_of_the_United_States) |
|  | [***United States Air Force portal***](http://en.wikipedia.org/wiki/Portal%3AUnited_States_Air_Force) |
|  | [***Aviation portal***](http://en.wikipedia.org/wiki/Portal%3AAviation) |

B-17 modified for testing of the [XT-34 turboprop](http://en.wikipedia.org/wiki/Pratt_%26_Whitney_T34). This aircraft has survived and has been rebuilt to stock configuration.

* [Boeing B-17 Flying Fortress variants](http://en.wikipedia.org/wiki/Boeing_B-17_Flying_Fortress_variants)

**Related development**

* [Boeing XB-15](http://en.wikipedia.org/wiki/Boeing_XB-15)
* [Boeing XB-38 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_XB-38_Flying_Fortress)
* [Boeing YB-40 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_YB-40_Flying_Fortress)
* [Boeing C-108 Flying Fortress](http://en.wikipedia.org/wiki/Boeing_C-108_Flying_Fortress)

**Comparable aircraft**

* [Avro Lancaster](http://en.wikipedia.org/wiki/Avro_Lancaster)
* [Consolidated B-24 Liberator](http://en.wikipedia.org/wiki/Consolidated_B-24_Liberator)
* [Focke-Wulf Fw 200](http://en.wikipedia.org/wiki/Focke-Wulf_Fw_200)
* [Handley Page Halifax](http://en.wikipedia.org/wiki/Handley_Page_Halifax)
* [Heinkel He 177](http://en.wikipedia.org/wiki/Heinkel_He_177)
* [Junkers Ju 290](http://en.wikipedia.org/wiki/Junkers_Ju_290)
* [Petlyakov Pe-8](http://en.wikipedia.org/wiki/Petlyakov_Pe-8)
* [Piaggio P.108](http://en.wikipedia.org/wiki/Piaggio_P.108)B
* [Short Stirling](http://en.wikipedia.org/wiki/Short_Stirling)

**Related lists**

* [List of bomber aircraft](http://en.wikipedia.org/wiki/List_of_bomber_aircraft)
* [List of military aircraft of the United States](http://en.wikipedia.org/wiki/List_of_military_aircraft_of_the_United_States)