Douglas B-18 Bolo

Développement

On a souvent présenté le Douglas B-18 « Bolo » comme la version de bombardement du DC-2. En réalité, s'il se basait sur ce dessin et en reprenait les calculs structuraux, c'était en grande partie, un appareil nouveau. Il est contemporain des Bloch 210/131, des premiers He 111 et Do 17, ainsi que des Hampden britanniques. Si il est souvent passé sous silence, il joua un rôle non négligeable dans la force aérienne américaine au début de la guerre, assurant les premières patrouilles côtières, et permettant la formation des équipages sur du matériel moderne. Il a été dessiné pour répondre à une demande de l'USAAC (US Army Air Corp), qui en 1934 cherche déjà un successeur à son bombardier Martin B-10 venant pourtant tout juste d'entrer en service. Le programme demandait de pouvoir transporter une charge de bombe double de celle du B-10, sur une distance elle aussi doublée, et à une vitesse d'au moins 200 mph (320 km/h). Trois constructeurs ont présenté leur appareil en réponse à cette demande : Douglas avec son model DB-1 (Douglas Bomber 1), Martin avec son modèle 146, et Boeing avec le model 299. Si le prototype de Boeing s'est révélé supérieur, et sera construit en série sous la désignation de B-17 (d'abord en très petites quantités, puisque seuls 13 YB-17 sont commandés), le modèle de Douglas se verra commander en janvier 1936, sous le nom de B-18 Bolo, en grande série : un premier contrat de 133 B-18, puis deux contrats additionnels de 177 B-18A (juin 1937), puis de 40 B-18A en juillet 1938. Soit une production totale de 350 unités, ce qui à l'époque, au sortir de la grande dépression, représentait une très grande série. Douglas a emporté ces marchés surtout du fait du bas prix du B-18 : 58 500 US$ pour les premiers, et 80 000 US$ pour les derniers (pour la seule cellule, les moteurs et équipements étant fournis par le gouvernement).

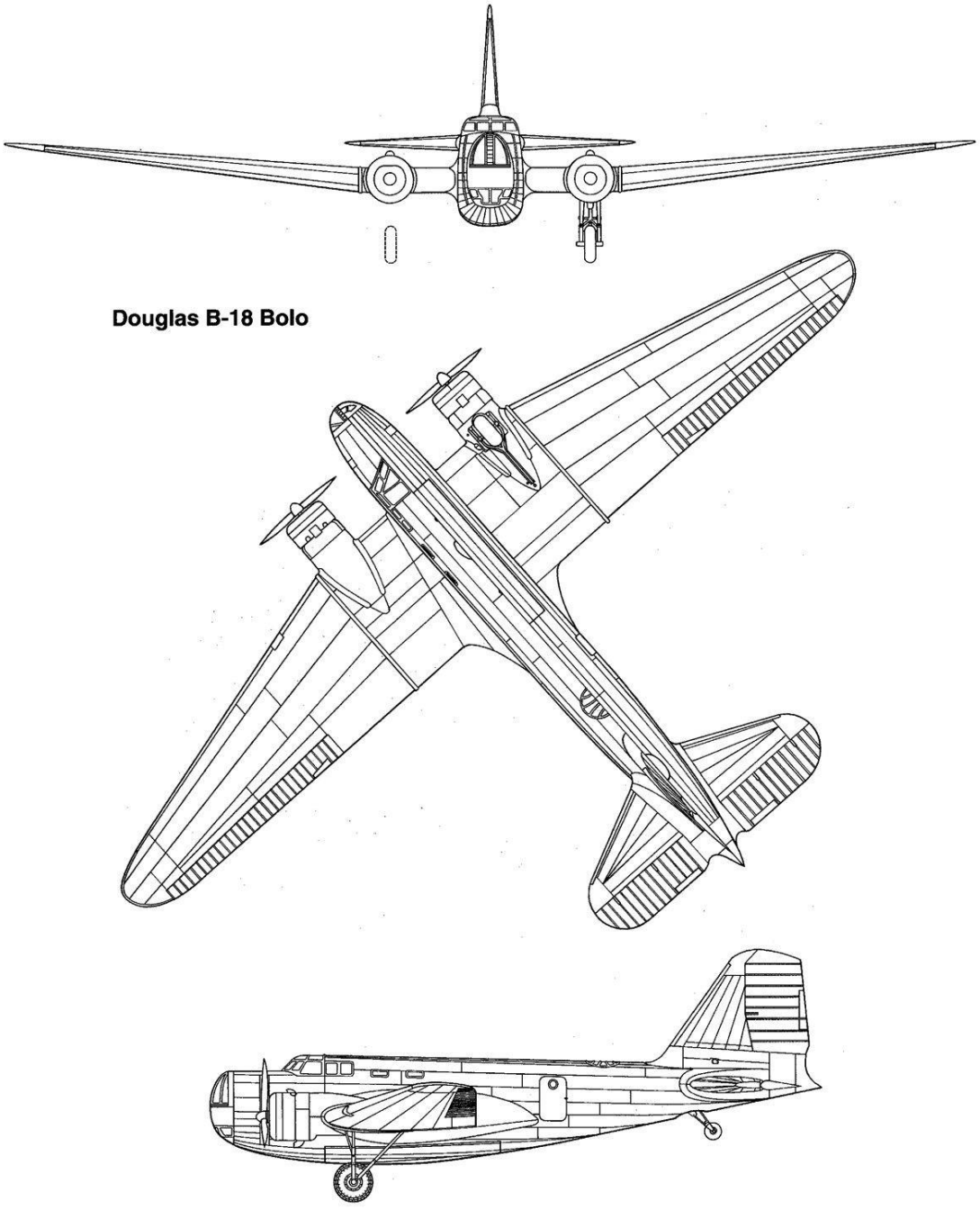
Description
Le B-18 est un bimoteur de bombardement moyen, entièrement métallique (à l'exception des gouvernes, entoilées), à train rentrant et voilure médiane.

Douglas B-18 Bolo au Panama

Le dessin du B-18 reprenait une partie des éléments du DC-2, principalement les empennages, et la voilure, dont l'envergure était accrue de 1.365m. Le train était renforcé par rapport à celui du DC-2. Le fuselage était complètement nouveau, beaucoup plus ventru pour pouvoir loger la soute à bombes. Du fait du nouveau dessin du fuselage, la voilure passait en position médiane. Le B-18 était défendu par trois postes de tir manuels, tous équipés d'une mitrailleuse de 7,62 : une tourelle avant, une tourelle dorsale rétractable, et un tunnel ventral. Il était propulsé par 2 Wright R-1820-45, de 930 hp, avec des hélices tripales à pas variable. Un équipage de 6 hommes le servait : Pilote, copilote, navigateur-bombardier, radio-mitrailleur, et 2 mitrailleurs. La variante B-18A voyait le contour du nez redessiné : le poste du bombardier passait en avant et au-dessus de celui du mitrailleur avant, donnant un nez plus pointu. Sa motorisation était changée pour des Wright R-1820-53, de 1000 hp. Le B-18B fut une modification du B-18A destiné à la lutte anti sous-marine. Le nez se voyait de nouveau redessiné, avec maintenant un radar SCR 517 air-surface replaçant le poste du bombardier, celui-ci étant déplacé en dessous, à la place du mitrailleuse avant. Son équipement ASM était complété par un MAD (détecteur d'anomalies magnétiques) au bout de la queue. Certains B-18B furent équipés de « rétro » bombes, une rétro-fusée permettait de freiner les bombes, de façon à ce qu'elles tombent à la verticale. C'était nécessaire, car le MAD ne détectait les masses métalliques qu'une fois à la verticale du sous-marin.

Utilisations opérationnelles

Les premiers B-18 ont été livrés à L'USAAC le 23 février 1937. La première unité opérationnelle à recevoir sa nouvelle monture fut le 7th Bombardment Group, basé à Hamilton Field en Californie. Il équipa de nombreuses formations, tant sur le continent, qu'outre mers (Pacifique, Panama). Cependant, dès 1940, au vu de la guerre en Europe, les déficiences du B-18 apparurent, et il ne fut maintenu dans les unités de première ligne qu'en attente du matériel plus modernes qui commençait à sortir des chaines, B-17, B-24, B-25, B-26. Les B-18 servirent principalement en patrouilles anti sous-marines le long des cotés US, mais aussi dans les Caraïbes, Panama et même le long de la cote brésilienne. Le B-18 est crédité de 3 U-Boats coulés : U-654, le 22 août 1942, U-512 le 2 octobre 1942 au large de Cayenne, et U-540 le 30 octobre 1942, au large de Newfoundland (RCAF Digby du 10 Sqd). Lorsque les B-24 et Catalyna prirent le relais fin 1943, les exemplaires restant furent affectés à l'entrainement, ou aux liaisons. La majeure partie des 33 Bolo basés à Hawaï, et des 12 exemplaires aux Philippines furent détruits dès les premières attaques, et ne jouèrent aucun rôle opérationnel. Après guerres, quelques Bolo furent vendus sur le marché civil, mais ils ne rencontrèrent pas le succès. Un exemplaire continua à voler jusqu'en 1971, pour le compte d'une coopérative de pèche de Baja California, au Mexique.



Douglas B-18 Bolo

Source : https://aviationsmilitaires.net/v3/kb/aircraft/show/1148/douglas-b-18-bolo

Version anglaise Wikipédia

The **Douglas B-18 Bolo** is an American heavy bomber which served with the United States Army Air Corps and the Royal Canadian Air Force (as the **Digby**) during the late 1930s and early 1940s. The Bolo was developed by the Douglas Aircraft Company from their DC-2, to replace the Martin B-10. By 1940 standards, it was slow, had an inadequate defensive armament, and carried too small a bomb load. A B-18 was one of the first USAAF aircraft to sink a German U-boat, *U-654* on 22 August 1942 in the Caribbean.[2] By 1942, surviving B-18s were relegated to antisubmarine, training and transport duties.

Design and development

In 1934, the United States Army Air Corps requested for a twin-engine heavy bomber with double the bomb load and range of the Martin B-10 then entering service. During the evaluation at Wright Field the following year, Douglas offered its **DB-1**. It was competing against the Boeing Model 299 (later developed into the Boeing B-17 Flying Fortress) and Martin 146.

Empennage section

While the Boeing design was clearly superior, the 299's four engines eliminated it from consideration despite being the favorite, and the crash of the prototype — caused by taking off with the controls still locked — put its purchase on hold. The Martin 146 was a minor improvement on the B-10, and was never seriously considered. During the depths of the Great Depression, the lower price of the DB-1 at $58,500 compared to $99,620 for the Model 299 also favored the Douglas entry, and it was ordered into immediate production in January 1936 as the B-18. The DB-1 design was modified from that of the DC-2. The wingspan was 4.5 ft (1.4 m) greater, the fuselage was narrower and deeper, and the wings were moved up to a mid-wing position to allow space under the spars for an enclosed bomb bay. Added armament included manually operated nose, dorsal, and ventral gun turrets. At one point, Preston Tucker's firm received a contract to supply Tucker remote controlled gun turrets but these were unsuccessful, and were never used in service.[3]

Operational history

B-18A formation during exercises over Hawaii, 1940–1941

B-18 at Aguadulce Army Airfield in Panama

The initial contract called for 133 B-18s (including the prototype), using Wright R-1820 radial engines. The last B-18 of the run, designated **DB-2** by the company, had a power-operated nose turret in a redesigned nose but this did not become standard. Additional contracts in 1937 (177 aircraft) and 1938 (40 aircraft) were for the **B-18A**, which had the bombardier's position further forward over the nose-gunner's station in a wedge shaped nose and the B-18A was fitted with more powerful engines. Deliveries of B-18s to Army units began in the first half of 1937, with the first examples being test and evaluation aircraft being turned over to the Materiel Division at Wright Field, Ohio, the Technical Training Command at Chanute Field, Illinois, the Aberdeen Proving Ground, Maryland, and Lowry Field, Colorado. Deliveries to operational groups began in late 1937, the first being the 7th Bombardment Group at Hamilton Field, California. Production B-18s, with full military equipment, had a maximum speed of 217 mph (349 km/h), cruising speed of 167 mph (269 km/h), and combat range of 850 mi (1,370 km). By 1940, most USAAC bomber squadrons were equipped with B-18s or B-18As.

However, the B-18/B-18A's deficiencies were made apparent when an all-red Soviet Ilyushin TsKB-30 named *Moskva* (a prototype for the twin-engine DB-3 which flew the same year as the B-18) made a non-stop flight from Moscow to North America in April 1939, a distance of 4,970 mi (8,000 km), which was well beyond the capabilities of the B-18. The TsKB-30/DB-3 was also 25% faster, was capable of carrying a bomb load 2.5 times as large as the B-18, and carried a heavier defensive armament. In August of the same year, a Japanese Mitsubishi G3M2 named *Nippon* (which also had its first flight the same year as the B-18) flew from Tokyo to the US, and then around the world, with the stage from Chitose, Hokkaido to Nome, Alaska being over 2,500 mi (4,000 km). The military version (code named *Nell* during WW2) could also carry more than the B-18, further, faster, and was also better armed. Both types had roughly 7,000 ft (2,100 m) higher service ceilings as well. The Air Corps conceded that the Bolo was obsolete and unsuitable for its intended role. However, in spite of this, the B-18/B-18A was still the most numerous American bomber type deployed outside the continental United States at the time of the attack on Pearl Harbor. The B-18 would be a stopgap until the more capable Boeing B-17 Flying Fortress and Consolidated B-24 Liberator became available in quantity.

World War II

When war came to the Pacific, most of the B-18/B-18A aircraft based overseas in the Philippines and in Hawaii were destroyed on the ground in the initial Japanese onslaught. The few Bolos that remained played no significant role in subsequent operations. The B-18s remaining in the continental US and in the Caribbean were then deployed in a defensive role in anticipation of attacks on the US mainland. These attacks never materialized. B-17s supplanted B-18s in first-line service in 1942. Following this, 122 B-18As were modified for anti-submarine warfare. The bombardier was replaced by a search radar with a large radome. Magnetic anomaly detection (MAD) equipment was sometimes housed in a tail boom. These aircraft, designated **B-18B**, were used in the Caribbean on anti-submarine patrol. On 2 October 1942, a B-18A, piloted by Captain Howard Burhanna Jr. of the 99th Bomb Squadron, depth charged and sank the German submarine *U-512* north of Cayenne, French Guiana.[4] Two aircraft were transferred to the Brazilian Air Force in 1942, and were used with a provisional conversion training unit set up under the provisions of Lend-Lease. They were later used for anti-submarine patrols. They were struck off at the end of the war.

RCAF Digby in flight

In 1940 the Royal Canadian Air Force acquired 20 B-18As (as the **Douglas Digby Mark I**), and also used them for patrol duties, being immediately issued to 10 Squadron to replace the squadron's Westland Wapitis.[5] Bolos and Digbys sank an additional two submarines during the course of the war. RCAF Eastern Air Command (EAC) Digbys carried out 11 attacks on U-boats. *U-520* was confirmed sunk by Flying Officer F. Raymes' crew of No. 10 (BR) Squadron, on 30 October 1942.[6] east of Newfoundland.[7] However, the antisubmarine role was relatively short-lived, and the Bolos were superseded in this role in 1943 by B-24 Liberators, which had a much heavier payload and a substantially longer range, which finally closed the mid-Atlantic gap. Some of the Douglas Digbys in Canadian service were converted into transports or used for training.[8]

Crop spraying Bolo

Surviving USAAF B-18s ended their useful lives in training and transport roles, and saw no further combat action. Two B-18As were modified as unarmed cargo transports under the designation **C-58**. At the end of the war, remaining examples were sold as surplus on the commercial market. Some postwar B-18s were operated as cargo or crop-spraying aircraft by commercial operators.

Specifications (B-18A)

Douglas B-18A Bolo 3-view silhouette

General characteristics

- **Crew:** Six
- **Length:** 57 ft 10 in (17.63 m)
- **Wingspan:** 89 ft 6 in (27.28 m)
- **Height:** 15 ft 2 in (4.62 m)
- **Wing area:** 959 sq ft (89.1 m^2)
- **Airfoil: root:** NACA 2215; **tip:** NACA 2209[24]
- **Empty weight:** 16,320 lb (7,403 kg)
- **Gross weight:** 24,000 lb (10,886 kg)
- **Max takeoff weight:** 27,673 lb (12,552 kg)
- **Powerplant:** 2 × Wright R-1820-53 Cyclone 9-cylinder air-cooled radial piston engines, 1,000 hp (750 kW) each
- **Propellers:** 3-bladed fully-feathering Hamilton Standard Hydromatic propellers

Performance

- **Maximum speed:** 216 mph (348 km/h, 188 kn) at 10,000 ft (3,000 m)
- **Cruise speed:** 167 mph (269 km/h, 145 kn)
- **Range:** 900 mi (1,400 km, 780 nmi)
- **Ferry range:** 2,100 mi (3,400 km, 1,800 nmi)
- **Service ceiling:** 23,900 ft (7,300 m)
- **Time to altitude:** 10,000 ft (3,000 m) in 9 minutes 54 seconds
- **Wing loading:** 25 lb/sq ft (120 kg/m^2)
- **Power/mass:** 0.0833 hp/lb (0.1369 kW/kg)

Armament

- **Guns:** 3 × 0.30 in (7.62 mm) machine guns
- **Bombs:** 2,000 lb (910 kg) normal; 4,400 lb (2,000 kg) maximum

Source : https://en.wikipedia.org/wiki/Douglas_B-18_Bolo