Bell P-59 Airacomet

Le **Bell P-59 Airacomet** est le premier avion de chasse à réaction conçu par les États-Unis. Il a fait son premier vol en octobre 1942 mais, à cause de ses performances décevantes, n'a jamais été engagé pour des missions de combat. Moins de 60 exemplaires ont été construits.

Historique

En avril 1941, les américains sont informés des travaux anglais sur un avion à réaction, le Gloster E28/39. Quelques mois plus tard, ils décident d'obtenir une licence pour faire construire le réacteur par la société General Electric, tandis que la compagnie Bell se voit confier le développement d'un avion de chasse équipé de ce réacteur. Les travaux sont lancés dans le plus grand secret au point que, afin de tromper les éventuels espions allemands, tant l'avion que le réacteur reçoivent une désignation qui correspond à d'autres projets plus classiques en cours. La construction d'un prototype commence dès le début de l'année 1942, et le premier vol a lieu le 2 octobre 1942. Évidemment, de nombreux problèmes apparaissent lors des essais, mais ils sont résolus progressivement. Deux autres prototypes suivent en 1943, puis quatre avions de pré-série avec des réacteurs plus puissants. Le dernier d'entre eux est doté de l'armement définitif : 3 mitrailleuses de 12,7 mm et un canon de 37 mm. Fin 1943, un exemplaire de pré-série est envoyé au Royaume-Uni en échange d'un Gloster Meteor. Les pilotes anglais le trouvent sous-motorisé, ce qui entraîne une faible accélération et une longueur de piste importante au décollage. Deux avions sont également prêtés à l'US Navy, qui les juge totalement inaptes à l'emploi sur un porte-avions. Déçue par les faibles performances du P-59, lequel ne dépasse alors pas 658 km/h en pointe (ce qui est inférieur aux plus récents des avions à hélice alors utilisés) et souffre également d'une autonomie insuffisante, l'armée américaine abandonne tout espoir de l'utiliser comme avion de combat. Une commande de 100 avions est annulée fin 1943. Deux lots de 21 P-59A et 29 P-59B sont construits, avec l'adoption d'un réacteur plus puissant en cours de production. Le Airacomet est alors uniquement utilisé pour entrainer pilotes et mécaniciens à l'utilisation et la maintenance d'un avion à réaction. Les ingénieurs de Bell avaient entamé des travaux sur un XP-59B monoréacteur. Ce dossier fut transmis fin 1942/début 1943 à la société Lockheed qui s'en servit pour développer le premier avion de combat à réaction américain réellement opérationnel : le Lockheed P-80 Shooting Star.

Source : https://www.techno-science.net/glossaire-definition/Bell-P-59-Airacomet.html

Version anglaise Wikipédia

The **Bell P-59 Airacomet** was a single-seat, twin jet-engine fighter aircraft that was designed and built by Bell Aircraft during World War II. It was the first jet produced in the United States. As the British were further along in jet engine development, they donated an engine for the United States to copy in 1941 that became the basis for the General Electric J31 jet engine used by the P-59 a year later. Because the plane was underpowered, the United States Army Air Forces (USAAF) was not impressed by its performance and canceled half of the original order for 100 fighters, using the completed aircraft as trainers. The USAAF would instead go on to select the Lockheed P-80 Shooting Star as its first operational jet fighter. Although no P-59s entered combat, the aircraft paved the way for later generations of U.S. turbojet-powered aircraft.

Design and development

The Power Jets W.1 engine that was later to be produced by GE as the General Electric J31

Major General Henry H. "Hap" Arnold became aware of the UK's jet program when he attended a taxiing demonstration of the Gloster E.28/39 in April 1941. The subject had been mentioned, but not in-depth, as part of the Tizard Mission the previous year.

He requested and was given, the plans for the aircraft's powerplant, the Power Jets W.1, which he took back to the U.S. He also arranged for an example of the engine, the Whittle W.1X turbojet, to be flown to the U.S. on 1 October in a Consolidated B-24 Liberator,[1] along with drawings for the more powerful W.2B/23 engine and a small team of Power Jets engineers. On 4 September, he offered the U.S. company General Electric a contract to produce an American version of the engine, which subsequently became the General Electric I-A. On the following day, he approached Lawrence Dale Bell, head of Bell Aircraft Corporation, to build a fighter to utilize it. Bell agreed and set to work on producing three prototypes. As a disinformation tactic, the USAAF gave the project the designation P-59A, to suggest it was a development of the unrelated Bell XP-59 fighter project which had been canceled. The design was finalized on 9 January 1942, and construction began. In March, long before the prototypes were completed, an order for 13 YP-59A pre-production aircraft was added to the contract.[2]

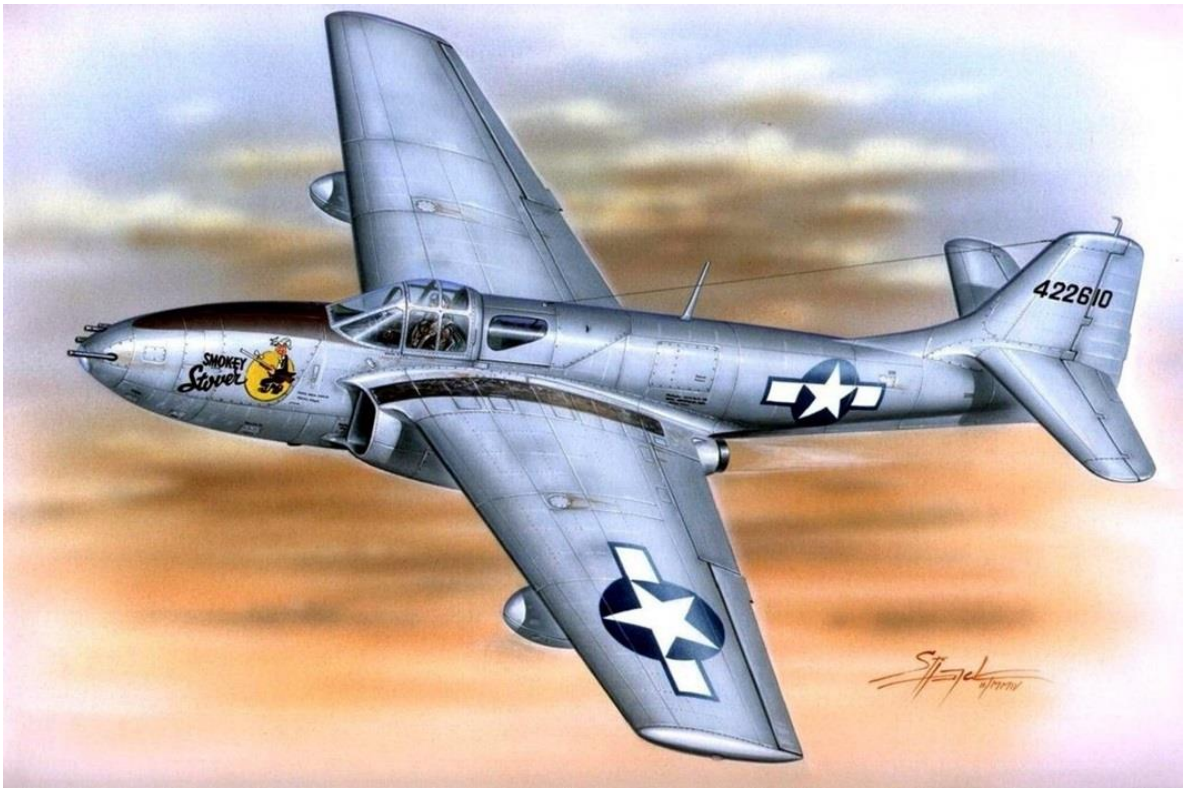
Details of fuselage and undercarriage of a P-59B, showing the nose armament

The P-59A had an oval cross-section, all-metal stressed skin semi-monocoque fuselage that housed a single pressurized cockpit. The mid-mounted, straight wing had two spars plus a false spar in the inner panel. The electrically powered tricycle landing gear was attached to the center spar. The pair of General Electric J31 turbojets were positioned under the wing roots in streamlined nacelles. The armament was located in the nose of the aircraft; two of the three XP-59As and most of the YP-59As had a pair of 37-millimeter (1.5 in) M10 autocannon. Later aircraft, including the production models, had one M10 autocannon and three 0.5-inch (12.7 mm) AN/M2 Browning heavy machine guns. The aircraft carried a total of 290 US gallons (1,100 L; 240 imp gal) of fuel in four self-sealing tanks in the inner wing panels. Both production models could carry 1,590-US-gallon (6,000 L; 1,320 imp gal) drop tanks under the wings. In addition, the P-59B was provided with a 66-US-gallon (250 L; 55 imp gal) fuel tank in each outer wing panel.[3][4] The crated prototype had been built on the second floor of a disused Pierce-Arrow factory, but its components were too big to fit through any elevator and required a hole to be broken in the brick outer wall to remove the first XP-59A. It was shipped to Muroc Army Air Field (today, Edwards Air Force Base) in California on 12 September 1942 by train for flight testing. The aircraft first became airborne during high-speed taxiing tests on 1 October with Bell test pilot Robert Stanley at the controls, although the first official flight was made by Colonel Laurence Craigie the next day. While being handled on the ground, the aircraft was fitted with a dummy propeller to disguise its true nature. When heavy rains flooded Rogers Dry Lake at Muroc in March 1943, the second prototype was towed 35 mi (56 km) to Hawes Field, an auxiliary airfield of Victorville Army Airfield, later George Air Force Base, over a public road. After one flight on 11 March, security concerns caused the jet to be transferred to nearby Harper Lake where it remained until 7 April.[5][6] Five of the Airacomets, a pair of XP-59As, two YP-59As, and a P-59B had open-air flight observer cockpits (similar to those of biplanes) fitted in the nose with a small windscreen, replacing the armament bay. The XP-59As were used for flight demonstrations and testing, but one of the latter pair was used as a "mother ship" for the other modified YP-59A during remote control trials in late 1944 and early 1945. After the drone crashed during take-off on 23 March, a P-59B was modified to serve as its replacement.[7][8] During diving trials in 1944, one YP-59A was forced to make a belly landing and another crashed when its entire empennage broke away.[9] Over the following months, tests on the prototypes and pre-production P-59s revealed a multitude of problems including poor engine response and reliability (common shortcomings of all early turbojets), poor lateral and directional stability at speeds over 290 mph (470 km/h), so that it tended to "snake" and was a poor gunnery platform. The performance was greatly hampered by the insufficient thrust from its engines that was far below expectations. The Army Air Force conducted combat trials against propeller-driven Lockheed P-38J Lightning and Republic P-47D Thunderbolt fighters in February 1944 and found that the older aircraft outperformed the jet. It, therefore, decided that the P-59 was best suited as a training aircraft to familiarize pilots with jet-engine aircraft.[10][11] Even as deliveries of the YP-59As began in July 1943, the USAAF had placed a preliminary order for 100 production machines as the P-59A Airacomet, the name having been chosen by Bell employees. This was confirmed on 11 March 1944 but was later cut to 50 aircraft on 10 October after the procurement bureaucracy had digested the earlier evaluation.[12][13]

Operational service

The first production P-59A with a Bell P-63 Kingcobra behind

The 13 service test YP-59As had a more powerful engine than their predecessor, the General Electric J31, but the performance improvement was negligible, with top speed increased by only 5 mph and a reduction in the time they could be used before an overhaul was needed. One of these aircraft, the third YP-59A (S/n: *42-108773*) was supplied to the Royal Air Force (receiving British serial *RJ362/G*), in exchange for the first production Gloster Meteor I, *EE210/G*.[14] British pilots found that the aircraft compared very unfavorably with the jets that they were already flying. Two YP-59A Airacomets (*42-108778* and *42-100779*) were also delivered to the U.S. Navy where they were evaluated as the "YF2L-1" but were quickly found completely unsuitable for carrier operations. Three P-59Bs were transferred to the Navy in 1945–1946, although they kept their designations. The Navy used all five of its jets as trainers and for flight testing.[15] Faced with their own ongoing difficulties, Bell eventually completed 50 production Airacomets, 20 P-59As and 30 P-59Bs; deliveries of P-59As took place in the fall of 1944.[16] The P-59Bs were assigned to the 412th Fighter Group to familiarize AAF pilots with the handling and performance characteristics of jet aircraft.[17] While the P-59 was not a great success, the type did give the USAAF and the USN experience with the operation of jet aircraft, in preparation for the more advanced types that would shortly become available.[12]



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