A Study In Longevity

The Curtiss P-40 in W.W. II

PART II

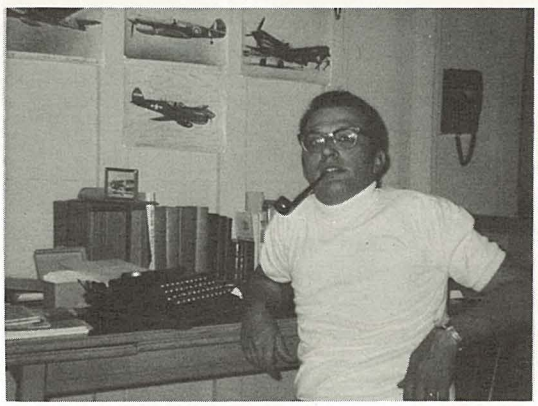
By ERIC H. HART

The Curtiss H87A also interested the U.S. Air Corps, already in the throes of major expansion. After a Materiel Division recommendation dated 10 June, the Air Corps lost interest in the XP-46 and ordered the H87A for itself, as the P-40D, in September. This change was proven correct for, when the XP-46 finally flew on 15 February 1941, it fell far below expectations and, under test, was adjudged inferior to the P-40D.

In September 1940, when Curtiss already was well into production of 1,500 H81A models of various designations for both the Air Corps and the R.A.F., along with firm orders for the improved H87A/P-40D, the first YP-39 and YP-43 were delivered and flown. The first YP-38 had still to make its appearance but, on the basis of the design and estimated performance, 607 P-38's were ordered. High-altitude capabilities were finally recognized as of prime importance with this contract. In a second step toward equality with European fighters, the Army, on 6 September, signed a contract with the Republic Aviation Corporation for an 11,500-lb. single-seat fighter powered by a turbo-supercharged R-2800 Double Wasp engine. Armament was eight .50-cal. machine guns. Designation was XP-47B. One week later, 773 P-47B's and P-47C's were ordered. Their need at last recognized, the Air Corps pinned its hopes on these two aircraft.

Curtiss, meanwhile, in an attempt to improve the altitude capabilities of the basic P-40 design, came up with a proposal to re-engine a P-40D with a Rolls-Royce Merlin. The limitations of the aircraft design prevented the installation of a turbo-supercharger, but the Merlin provided a higher ceiling with a two-speed internal supercharger. Being similar to the Allison, the Rolls could

FLUNG DUNG of 80th Fighter Group, a Curtiss P-40N-20-CU s/n 43-22791, with Allison V1710-99 engine. In Burma, 1944. (Photo — Kenneth M. Sumney via Author)



ABOUT THE AUTHOR:

Eric H. Hart, of Milwaukee, has collected material on the P-40 series for twenty years. He says "Along with this has come a general interest in the aircraft and tactics of WWII. My file is large and diverse, but far from complete." The results of his work have shown in "The Early Curtiss P-40's," Vol. 12, No. 4 (Winter 1967) pp. 254-261; Part 1 of this article was in Vol. 14, No. 1 (Spring 1969). Further studies on the usage of the P-40 are in file for future presentation. P-40 pictures in many attitudes and colors line the walls of his study.

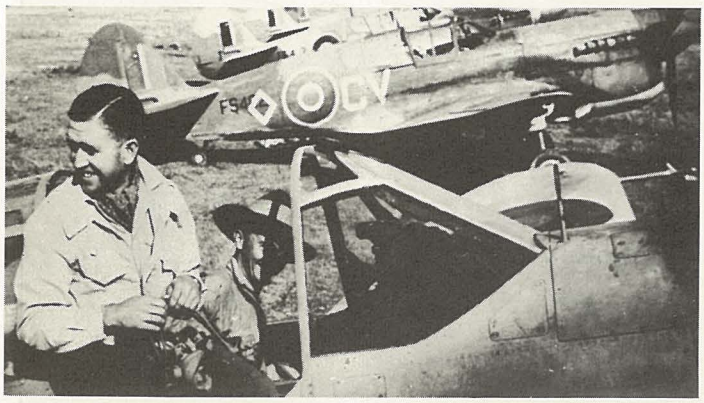
be utilized to provide a much-improved service ceiling for the P-40 and still not disrupt the production line. Plans were already in hand for the license-manufacture of the redoubtable Merlin by Packard, so an XP-40F was ordered, using an imported engine. Tests were satisfactorily conducted and improvements over the P-40D caused production orders to be signed. The first P-40F was flown by Mr. Child on 30 June 1941.

Even as the H87A was first receiving orders, Curtiss continued plans to replace the P-40 with a new design to compete with Lockheed and Republic. Several proposals were made to the Air Corps. The most promising appeared to be a development of the basic P-40 design utilizing the N.A.C.A.'s low-drag laminar-flow airfoil, the Continental XIV-1430-3 inverted-vee engine then under test, and eight .50-cal. guns. This plan was accepted and orders placed for two prototypes designated XP-53, on 1 October 1940. Six weeks later, though, the Air Corps informed Curtiss that it would be interested in a fighter with the laminar-flow wing powered by a British Merlin engine. This was agreed to, and the second XP-53 was to be completed with the Rolls as the XP-60.

As planning continued on what was finally thought to be the successor to the P-40 on the production lines, consideration was given to still another engine. Delays were foreseen on delivery of license-built versions of the Merlin from Packard and other fighters were also slated for its use. It was decided, then, that a turbo-supercharged Allison V-1710-75 would power the P-60A, 1,950 of which were ordered on 31 October 1941.

On the basis of this order work was begun on the last of the P-40's (the P-40K, . essentially a re-engined P-40E-1). Six hundred were ordered with lend-lease funds exclusively for the Chinese Air Force.

As circumstances would have it, however, the flight testing of the XP-60 was not proceeding satisfactorily. Performance was not up to that guaranteed by Curtiss, due to a poorly-finished wing and an engine that could not deliver full power. As 1941 waned, the P-60A was found to be underpowered. Two alternatives were given to remedy the situation: install a more powerful engine or build a fighter in lieu of the P-60. Work on the aircraft stopped on 20 December and, on 2 January 1942, the Air Corps decided that, instead of 1,950 P-60A's, only one XP-60A, one XP-60B and one XP-60C should be built, each with various engines and/or superchargers.



Evidence of Australian Kittyhawk II's in Mediterranean Theatre of Operations. These from No. 3 Squadron, RAAF. Middle one is FS402 or FS482. (Photo – Dick Hill via Author)

This blow, to the largest builder of fighter aircraft in the country immediately after Pearl Harbor, was felt at all levels. However, the sudden need for aircraft, both by the U.S.A.A.F. and the Allies, caused the P-40 to be reintroduced to production plans, at least until the P-38 and P-47 were on hand in sufficient numbers. The 600 P-40K's were taken over by the Army Air Forces and were supplemented by an order for 700 more; a light-weight P-40F, the P-40L, was contracted for; and the P-40M for the R.A.F. followed. These aircraft insured a continued supply to all those needing equipment. This was of prime concern, as Curtiss kept up production of its sole fighter.

As the war went on, the P-38 finally came into useful service during the invasion of North Africa in November 1942. And in January 1943, the P-47 made its appearance in England. Curtiss kept up work on its P-60 varients, in an attempt for a contract. The R-2800 radial-powered XP-60C brought a letter contract for 500 similar P-60A-1's in November 1942. But this, too, failed to come to fruition.

In addition, work had been progressing on what was to be the fastest varient of the P-40 to enter production. The lightweight P-40N also had the highest service ceiling yet attributed to the type, and 700 were ordered early in 1943. The apparent success of the P-38 and P-47, though, precluded the need for this model, as its performance still could not match the competition.

These developments, however, had been overshadowed by the first flights of the North American XP-51B, in September 1942. This marriage of a fine design with a Merlin engine was sensational. The P-51B entered service in England in December 1943.

As deliveries of these newer types gained momentum, the P-40 was replaced in A.A.F. service. But it would be some time before they could be released to Allied forces, and so the P-40N was reworked into a fighter-bomber for lend-lease supply. In this role, it did an admirable job in all combat theaters in which it appeared. The R.A.F. continued its use in Italy, due to the lack of opposition. The Russians needed the Warhawk because of the incridable size of the Eastern Front and its need for any aircraft. The Australians received the P-40N at a time when they were being relegated to duties which they considered as rear-echelon, and due to the lower standards of Japanese pilots. The Curtiss continued to be shipped to the C.B.I., due to that theater's low priority for new equipment.

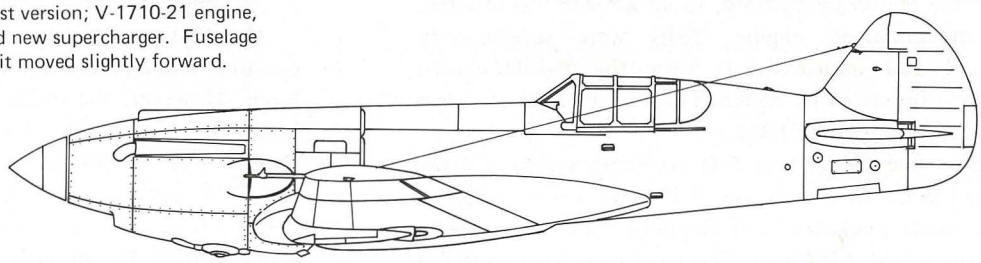
Finally, when the P-47's and P-51's reached a production level that enabled them to be supplied to the Allies, production of the P-40 ended, in December of 1944.

It can be seen that had it not been for the failure of the P-46 and P-60 and the surprise attack of the Japanese, the P-40 would have been phased out in 1942. But circumstances, and the strange inability of Curtiss to come up with a winning successor, kept the type on order. It was needed and it was available. The P-40 thus became history.

P-40 DEVELOPMENT

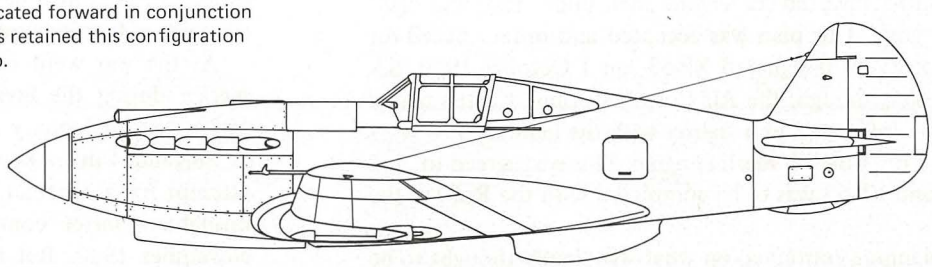
XP-37 was derived from model 75 (P-36) with V-1710-11 engine. YP-37 was service test version; V-1710-21 engine, modified cooling system and new supercharger. Fuselage extended 1' 10" and cockpit moved slightly forward.

YP-37 (H75-I)



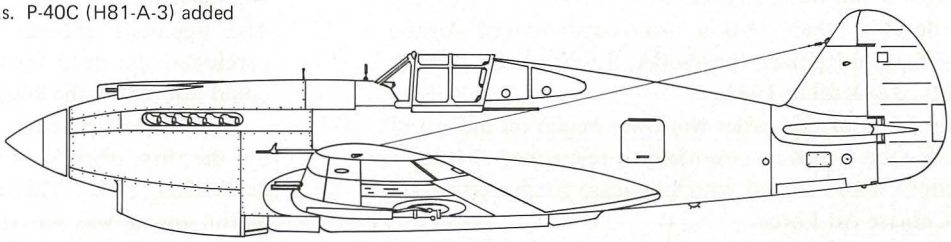
Tenth P-36A (A.C. 38-010) with V-1710-19 engine. Second model of XP-40 had radiator relocated forward in conjunction with oil cooler. Production P-40's retained this configuration but with larger radiator and scoop.

XP-40 (H81)



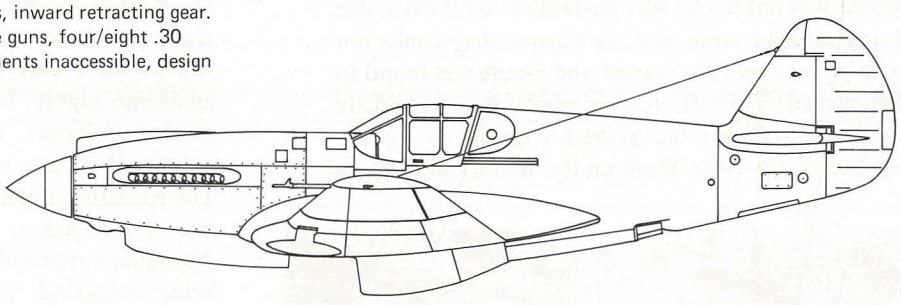
P-40 thru P-40C used V-1710-33 engine, two .50 Cal. nose guns, two .30 Cal. wing guns. P-40A designation not used, all H81-A's to France. P-40B (H81-A-2) had four wing guns, armor plate and leakproof tanks. P-40C (H81-A-3) added external leakproof tank.

P-40B (H81-A-2)



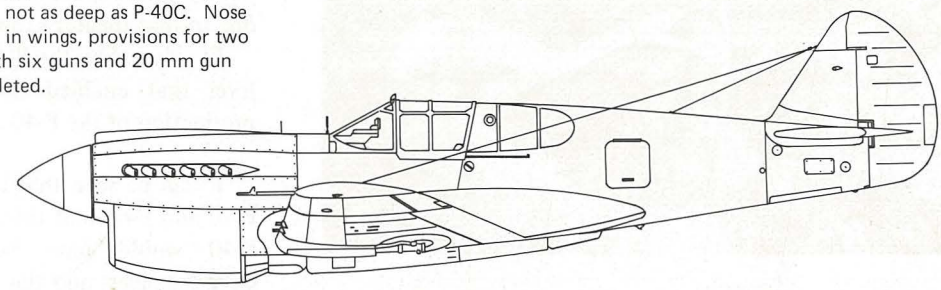
Derived from basic XP-40 design. V-1710-39 engine, redesigned wing with slats operated with flaps, inward retracting gear. Heavily armmored, Two .50 Cal. nose guns, four/eight .30 Cal. wing guns. Armor made components inaccessible, design dropped in favor of P-40D.

XP-46 (CP-39-13)



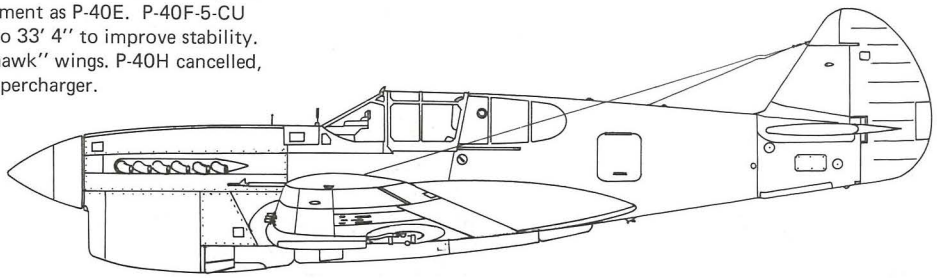
V-1710-39 engine gearing provided slightly higher thrust line and slightly shorter fuselage. Canopy and fuselage redesigned for better visibility, cross section not as deep as P-40C. Nose guns removed, four .50 Cal. guns in wings, provisions for two 20mm guns. P-40E same but with six guns and 20 mm gun provisions and external stores deleted.

P-40D (H87-A)



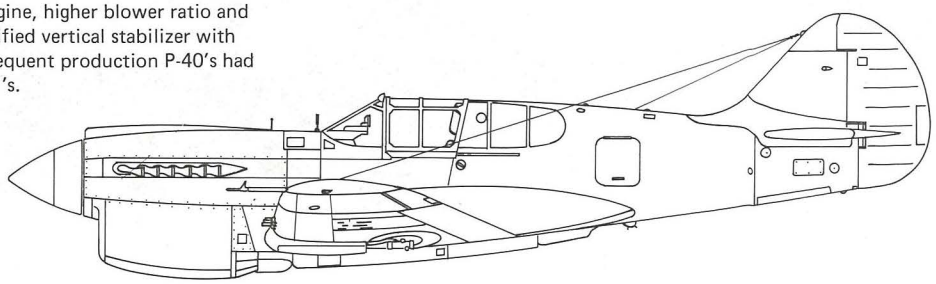
XP-40F was production P-40D airframe with V-1650-1 engine. Production P-40F had same armament as P-40E. P-40F-5-CU and subs. had fuselage extended to 33' 4" to improve stability. P-40G same as P-40 with "Tomahawk" wings. P-40H cancelled, P-40J to have been P-40E with supercharger.

P-40F



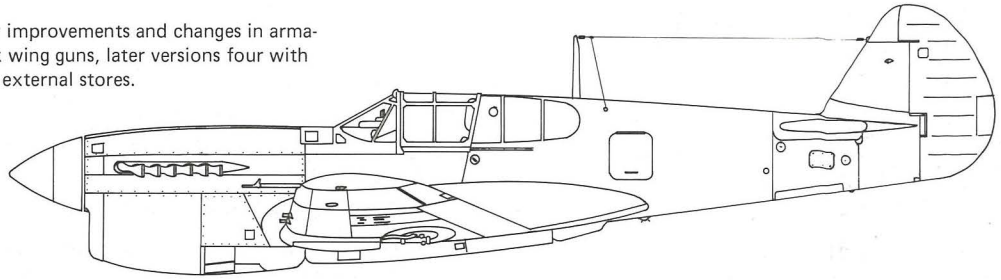
Same as P-40E with V-1710-73 engine, higher blower ratio and boost control. Early K's had modified vertical stabilizer with large fillet, P-40K-10-CU and subsequent production P-40's had extended fuselage as in later P-40F's.

P-40K



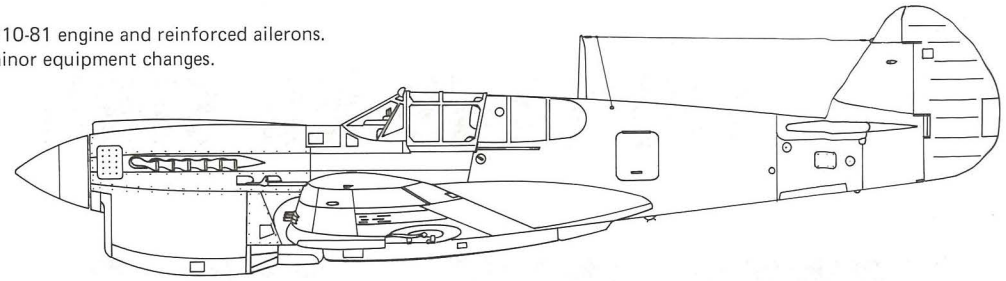
Same as P-40F with minor improvements and changes in armament. P-40L-1-CU had six wing guns, later versions four with provisions for rockets and external stores.

P-40L



Same as P-40K with V-1710-81 engine and reinforced ailerons. Six wing guns, rockets, minor equipment changes.

P-40M



P-40N-1-CU was stripped of battery, starter, aux tanks and some minor equipment as lightweight fighter. Similar to P-40M with modified canopy. Armament and engine varied with block number, four or six guns, V-1710-81, -91, or -115 engine. Some equipped with radio direction finder.

P-40N