

Sikorsky Archives *News*

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Corsair



**The Famous WW II Fighter
from Vought-Sikorsky**

IGOR I. SIKORSKY HISTORICAL ARCHIVES INC.



**Lew Knapp remembers a
Corsair program Crisis**



It all began with the V-143. Originally a Northrop Design, the V-141 was developed into the V-143. Only one was built, in 1937. It was powered by a Pratt & Whitney” Wasp Junior”. After losing out in US Navy competition (they liked the way the gear retracted but apparently nothing else appealed to them), it was sold to the Japanese. It is said the Japanese got some of the ideas for the Zero fighter from it.

Work started on the Corsair to respond to a Navy competition in 1938 .The team was headed by Rex Beisel. At that time Vought-Sikorsky, Pratt & Whitney and Hamilton Standard were all Divisions of United Aircraft. The unique inverted gull wing kept the landing gear short, the folded wing height to a minimum, improved pilot visibility, and last but not least kept aerodynamic drag low because the wing root was at right angle to the circular fuselage. A Pratt & Whitney R2800 radial engine was installed, giving 1,800 Horsepower at Sea Level.



XF4U-1



Development During development, the cockpit was moved back to make room for a larger fuel tank, but the original “bird-cage” canopy was retained. Many fighters of that era started out with “birdcages” or parallel single curvature transparencies. It was not yet possible to make bubble canopies. That capability gradually arrived a year or two later. The Corsair was the first fighter to exceed 400 mph with a full military load.

Production started in 1940, and Corsairs remained in service until well after the war, the aircraft continuing in use up to and including the Korean War. Corsairs were built by Chance Vought, Brewster Aeronautical, and Goodyear Aircraft.



Operations



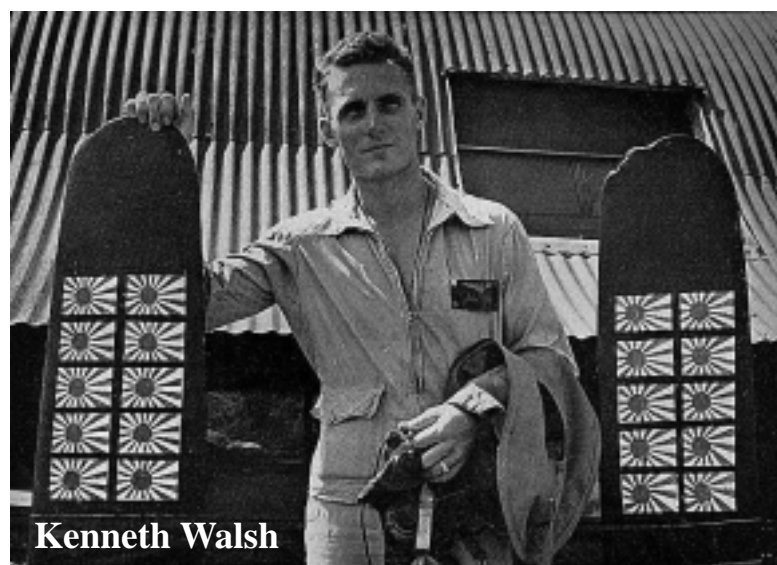


Ira "Ike" Kepford



Pappy Boyington

The Aces and the Pilots



Kenneth Walsh

Design and Production



Production



Wing Spars



Drafting



Riveting

We Raised the Pilots' Eyes (and solved a Corsair program crisis)

In September 1942 F4U-1 Navy shipboard trials confirmed what most of us had known, that it was almost impossible to see to land the bird on a carrier. Positioning a 237 gallon self sealing fuel tank between the engine and the pilot had moved him 32 inches further aft than in the XF4U-1, and the nose-high landing attitude blocked out the deck. Navy



brass threatened to cancel the whole Corsair program.

As the junior member of Vought's fuselage design group - I was 19 years old - I was assigned to stay all night to sketch up a quick solution, to raise the pilot's eyeball five inches and to retrofit the change. Project Engineer Russ Clark (later president of Vought) arrived early in the morning to scoop up the sketches and catch the train to Washington, where he dashed to the old W building on Constitution Avenue and sold the scheme to Navair officials. Immediately, Ted Lillemoe (now retired but still flying, the only Lillemoe in Vermont) led a team to redesign the canopy. The object was to install it on the earliest aircraft possible on an ever-accelerating assembly line, and to retrofit the aircraft we couldn't catch. We ended up putting it on the 125th and subsequent and sending kits to retrofit the 6th and subsequent. The first five aircraft were never changed; they stayed at the plant for follow-on testing.

The first Corsairs had a "birdcage" canopy, with a three-light glass windshield and a six paneled plastic sliding section. The mechanism, done by some clever design draftsman, had forward rollers on an extruded track and aft roller trolleys that rode up, then aft, along a rear track embedded in a "turtledeck" behind the pilot, so that, when closed, the canopy was flush with the after structure. The aircraft had good visibility where we didn't need it; two notches in the turtledeck provided rearward views for owl-necked pilots and the bottom of the fuselage (there was no cockpit floor, just a pair of foot troughs) contained a window usually covered with oil. Our new design replaced the canopy by a five-inch higher compound-curved three-panel sliding section mounted on the same track fixtures. The transparencies were Lucite or Plexiglas, formed by a new process over a felt-covered wooden mold. Our new windshield used existing fasteners: its contour butted the forward edge of the new sliding canopy.

Incorporating this mandatory fix gave Engineering an opportunity to make a couple of other desired changes. The canopy, designed to ride upward on the rear tracks, was hard to open so we improved its operating mechanism. We replaced hard-to-get extruded track with a more durable track of stainless sheet. The rear windows and the bottom one came out; more armor plate went in. Bulkhead 186, the aft cabin bulkhead, acquired an upper panel of armor plate, and the aft end of the new sliding section had a plate of half-inch thick aluminum. We toyed with a curved armored windshield, but ended with thick laminated glass hung inside the center panel. The changes raised the pilot's eye five inches and saved the program from cancellation.

Even so, Navy Squadron VF12 did not deploy the first delivered F4Us aboard carriers. Instead they went to land based Marine Squadron VMF 214 on Guadalcanal, where they were desperately needed. The stories of their exploits are legend. The Marines considered landing visibility an idiosyncrasy, not a problem. Verne Pepper, one of Pappy Boyington's Black Sheep boys, affectionately referred to the long nosed bird as "old hose nose."

Actually, the first carrier operated Corsairs were British, flying from *HMS Victorious* against the Germans in Norway. US Navy flyers quickly followed up on British-developed landing techniques, and by the end of the



war were regularly attacking Tokyo from the decks of *Yorktown* and *Bunker Hill*. Late in the war, the canopy underwent a second update. A new free forming process — blowing heated plastic almost like bubblegum — gave clearer vision in a one-piece transparency. The flat laminated armor resistant glass became the windshield center panel itself. This change made the 689th Corsair, and became the final cockpit canopy on the F4U-4, F4U-5, and AU-1 series.

Ultimately, 12,571 Corsairs were built. They were all made possible by our crash project in 1942 and 1943 to raise the pilot's eye and rescue the program.

- Lew Knapp



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