## vesterday's wings

# THE SIKORSKY S-39

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Throughout the years, a number of single-engine airplanes have been developed into twins, or even trimotors, in the interest of increased performance, reliability, or both. But taking a twinengine aircraft and redesigning it as a single is very rare. The Sikorsky S-39, described here, is a good example of the latter procedure.

The late Igor Sikorsky, best remembered for his development of helicopters after 1940, came to the U.S. from Russia following World War I. He had begun his aircraft experiments in 1907 and had produced the world's first fourengine bombers for the Russians during WW-I. When he set up his new American factory on a shoestring in 1923, he still advocated large airplanes. His first American effort was the S-29A ("A" for "American"), a twin-engine transport that unfortunately was ahead of its time—there were no airlines around to use it.

Government withdrawal from airmail operations and the establishment of recognized airlines in 1926-27 opened up new markets, and Sikorsky moved quickly to supply them. His S-34 was a unique twin; it was not only a transport but also an amphibian. With engines of only 220 hp, the S-34 and its successor, the S-36, did not sell in quantity. They did lead, however, to the improved and enlarged S-38 model of 1928, which became a big seller in its class.

With airlines, corporations, and the military buying S-38s, Sikorsky went after further markets with a smaller S-39. This was, in effect, a scaled-down S-38 powered by two 115-hp British Cirrus air-cooled, in-line engines. These proved to be inadequate, and the first prototype crashed in December 1929, on its third flight, when one of the engines failed.

This misfortune led to a major redesign for the second prototype, which had an identical airframe but was fitted with a single 300-hp Pratt & Whitney Wasp Jr. radial engine. This engine was itself new and, as its name implied, was a smaller edition of the well-established Wasp. The Wasp Jr. was a logical choice, for Sikorsky was now part of United Aircraft and Transport Corp. the first of the big aviation conglomerates—which included Boeing, Sikorsky, and Chance Vought as airplane manufacturers and Pratt & Whitney and Hamilton-Standard as engine and propeller builders.

As a twin, the first S-39 had had the twin booms and rudders of the S-38, and this feature was originally duplicated in the second prototype. However, the two rudders were not as effective as they should have been behind the single engine, so the second prototype underwent a further change to a single vertical tail.

The production S-39A, configured like the second prototype, received its approved type certificate on July 22, 1930. The construction was advanced for its day, with an all-metal hull and metalframe wings and tail covered by fabric. The unique short hull contained a fully enclosed cabin, seating four. The pilot and copilot sat at novel dual controls in the front: the pilot, on the left, had a control wheel, while the copilot, on the right, had a stick.

The landing gear was completely redesigned from that of the prototypes and retracted only to get the wheels out of water, not to improve the streamlining. Streamlining, in fact, was not a strong point of the Sikorsky designs of that time. Utility, not speed, was the object.

The factory, knowing that it had a good design, laid down a production batch of 10 S-39As, but the depression made them hard to sell, except on an individual custom basis. Improvements were made following evaluation of the earliest S-39As, and as a result a second batch of 10 S-39Bs was laid down;



The first prototype Sikorský S-39, with British Cirrus engines, twin rudders, and landing gear attached to the wing. The second prototype was identical, except for a single Wasp Jr. engine, before it was modified to a single-rudder type.

### SIKORSKY S-39B

#### **Specifications and Performance**

| Wingspan   | 52 ft 0 in    |
|--|---------------|
| Length   | 32 ft 2 in    |
| Wing area  | 350 sq ft     |
| Powerplant   | P&W Wasp Jr., |
| a state of the sta | 300 hp        |
| Empty weight   | 2.678 lb      |
| Gross weight   | 4,000 lb      |
| High speed   | 119 mph       |
| Cruise speed   | 100 mph       |
| Landing speed  | 54 mph        |
| Rate of climb  | 750 fpm       |
| Service ceiling  | 18,000 ft     |
| Range  | 400 mi        |
| Price  | \$20,000      |
|  |               |
|  |               |

however, these also were hard to sell. Outwardly, the "B" differed from the "A" in a redesign of the vertical tail that added area below the horizontal stabilizer. Internally, the S-39B carried five persons, the rear seat having been made to hold three. A few of the S-39As and Bs were converted to S-39Cs by a change to a 400-hp Wasp Jr. engine, and at least one was converted to a seven-place S-39CS ("S" for "Special").

Perhaps the best-known S-39 was a "B," NC-52V. Used by explorer Martin Johnson in conjunction with an S-38, this aircraft was named *Spirit of Africa*. Both of Johnson's Sikorskys had memorable color schemes: S-38 had its hull painted in a zebra pattern, and the S-39 was spotted like a giraffe.

The S-39s eventually drifted into the second-hand market and carried on in remote areas as workhorses. The last known examples under U.S. registration were in Alaska in the 1950s but are now out of service. The hulk of one of these S-39s has recently been acquired by the Connecticut Aviation Historical Society and will eventually be restored as the last example of a unique design.

Some of the "Sportsman Amphibians," like this deluxe S-39B, showed a token attempt at streamlining by addition of engine anti-drag rings or the full NACA cowling shown here. Photo by Boardman C. Reed.



Martin Johnson's giraffe-marked Spirit of Africa. Entrance to the S-39 was unusually simple for an amphibian; the full length of the cabin roof hinged upward to form a hatch. Photo by A. U. Schmidt.