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How high did the spirit of st louis fly

Monoplane flown solo by Charles Lindbergh
This article is about Charles Lindbergh's aircraft. For other uses, see The Spirit of St. Louis (disambiguation).
Spirit of St. LouisRyan NYP Role Long-range aircraft [for record attempt] Manufacturer Ryan Airlines Designer Donald A. Hall First flight April 28, 1927 Retired April 30, 1928 Produced 1927 Number built 1 (not including later replicas and reproductions) Developed from Ryan M-2 Career Registration N-X-211 Owners and operators Charles Lindbergh Flights 174 Total hours 489 hours, 28 minutes Preserved at National Air and Space Museum The Spirit of St. Louis (formally the Ryan NYP, registration: N-X-211) is the custom-built, single-engine, single-seat, high-wing monoplane that was flown by Charles Lindbergh on May 20–21, 1927, on the first solo nonstop transatlantic flight from Long Island, New York, to Paris, France, for which Lindbergh won the \$25,000 Orteig Prize.[1] Lindbergh took off in the Spirit from Roosevelt Airfield, Garden City, New York, and landed 33 hours, 30 minutes later at Aéroport Le Bourget in Paris, France, a distance of approximately 3,600 miles (5,800 km).[2] One of the best-known aircraft in the world, the Spirit was built by Ryan Airlines in San Diego, California, owned and operated at the time by Benjamin Franklin Mahoney, who had purchased it from its founder, T. Claude Ryan, in 1926. The Spirit is on permanent display in the main entryway's Milestones of Flight gallery at the Smithsonian Institution's National Air and Space Museum in Washington, D.C. Development Officially known as the "Ryan NYP" (for New York to Paris), the single-engine monoplane was designed by Donald A. Hall of Ryan Airlines and named the "Spirit of St. Louis" in honor of Lindbergh's supporters from the St. Louis Raquette Club in his then hometown of St. Louis, Missouri. To save design time, the NYP was loosely based on the company's 1926 Ryan M-2 mailplane, the main difference being the NYP's 4,000-mile range. As a nonstandard design, the government assigned it the registration number N-X-211 (for "experimental"). Hall documented his design in "Engineering Data on the Spirit of St. Louis", which he prepared for the National Advisory Committee for Aeronautics (NACA) and is included as an appendix to Lindbergh's 1953 Pulitzer Prize winning book The Spirit of St. Louis. B.F. "Frank" Mahoney and Claude Ryan had co-founded the company as an airline in 1925 and Ryan remained with the company after Mahoney bought out his interest in 1926, although there is some dispute as to how involved Ryan may have been in its management after selling his share. It is known, however, that Hawley Bowlus was the factory manager who oversaw construction of the Ryan NYP, and that Mahoney was the sole owner at the time of Donald A. Hall's hiring. The Spirit was designed and built in San Diego to compete for the \$25,000 Orteig Prize for the first nonstop flight between New York and Paris.[3] Hall and Ryan Airlines staff worked closely with Lindbergh to design and build the Spirit in just 60 days. Although what was actually paid to Ryan Airlines for the project is not clear, Mahoney agreed to build the plane for \$6,000 and said that there would be no profit; he offered an engine, instruments, etc. at cost. After first approaching several major aircraft manufacturers without success, in early February 1927 Lindlbergh, who as a U.S. Air Mail pilot was familiar with the good record of the M-1 with Pacific Air Transport, wired, "Can you construct Whirlwind engine plane capable flying nonstop between New York and Paris ...?" Mahoney was away from the factory, but Ryan answered, "Can build plane similar M-1 but larger wings... delivery about three months." Lindbergh wired back that due to competition, delivery in less than three months was essential. Many years later, John Vanderlinde, chief mechanic of Ryan Airlines, recalled, "But nothing fazed B.F. Mahoney, the young sportsman who had just bought Ryan." Mahoney telegraphed Lindbergh back the same day, "Can complete in two months." Part of the funding for the Spirit of St. Louis came from Lindbergh's own earnings as a U.S. Air Mail pilot (January 15, 1927 RAC paycheck).Lindbergh arrived in San Diego on February 23 and toured the factory with Mahoney, meeting Bowlus, chief engineer Donald Hall, and sales manager A. J. Edwards. After further discussions between Mahoney, Hall and Lindbergh, Mahoney offered to build the Spirit for \$10,580, restating his commitment to deliver it in 60 days. Lindbergh contributed \$2,000 toward the cost of the Spirit that he had saved from his earnings as an Air Mail pilot for Robertson Aircraft Corporation. The rest was provided by the Spirit of St. Louis Organization. Lindbergh was convinced: "I believe in Hall's ability; I like Mahoney's enthusiasm. I have confidence in the character of the workmen I've met."[Citation needed] He then went to the airfield to familiarize himself with a Ryan aircraft, either an M-1 or an M-2, then telegraphed his St. Louis backers and recommended the deal, which was quickly approved. Mahoney lived up to his commitment. Working exclusively on the aircraft and closely with Lindbergh, the staff completed the Spirit of St. Louis 60 days after Lindbergh arrived in San Diego. Powered by a Wright Whirlwind J-5C 223-hp radial engine, it had a 14 m (46-foot) wingspan, 3 m (10 ft) longer than the M-1, to accommodate the heavy load of 1,610 l (425 gal) of fuel. In his 1927 book We, Lindbergh acknowledged the builders' achievement with a photograph captioned "The Men Who Made the Plane", identifying: "B. Franklin Mahoney, president, Ryan Airlines", Bowlus, Hall and Edwards standing with the aviator in front of the completed aircraft.[4] Design Lindbergh and the Spirit of St. Louis at Roosevelt Field, with perlie engine-turned finishing on the nose panels. Spirit of St. Louis cockpit, Washington, D.C. Lindbergh believed that multiple engines resulted in a greater risk of failure while a single-engine design would give him greater range. To increase fuel efficiency, the Spirit of St. Louis was also one of the most advanced and aerodynamically streamlined designs of its era. Lindbergh believed that a flight made in a single-seat monoplane designed around the dependable Wright J-5 Whirlwind radial engine provided the best chance of success. The Ryan NYP had a total fuel capacity of 450 U.S. gallons (1,700 L; 370 imp gal) or 2,710 pounds (1,230 kg) of gasoline, which was necessary in order to have the range to make the anticipated flight non-stop. The fuel was stored in five fuel tanks, a forward tank - 88 U.S. gal (330 L; 73 imp gal), the main - 209 U.S. gal (790 L; 174 imp gal), and three wing tanks - total of 153 U.S. gal (580 L; 127 imp gal).[5] Lindbergh modified the design of the plane's "trampoline struts" attached to the landing gear to provide a wider wheelbase in order to accommodate the weight of the fuel.[6] At Lindbergh's request, the large main and forward fuel tanks were placed in the forward section of the fuselage, in front of the pilot, with the oil tank acting as a firewall. This arrangement improved the center of gravity and reduced the risk of the pilot being crushed to death between the main tank and the engine in the event of a crash. This design decision meant that there could be no front windshield, and that forward visibility would be limited to the side windows. This did not concern Lindbergh as he was accustomed to flying in the rear cockpit of mail planes with mail bags in the front. When he wanted to see forward, he would slightly yaw the aircraft and look out the side. To provide some forward vision as a precaution against hitting ship masts, trees, or structures while flying at low altitude, a Ryan employee who had served in the submarine service installed a periscope which Lindbergh helped design. It is unclear whether the periscope was used during the flight. The instrument panel housed fuel pressure, oil pressure and temperature gauges, a clock, altimeter, tachometer, airspeed indicator, bank and turn indicator, and a liquid magnetic compass. The main compass was mounted behind Lindbergh in the cockpit, and he read it using the mirror from a women's makeup case which was mounted to the ceiling using chewing gum.[6] Lindbergh also installed a newly developed Earth inductor Compass made by the Pioneer Instrument Company which told him more accurately navigate while taking account of the magnetic declination of the earth.[7] Lindbergh did later write how these random unanticipated movements helped keep him awake at various times during the flight.[11] The stiff wicker seat in the cockpit was also purposely uncomfortable, although custom-fitted to Lindbergh's tall and lanky frame. Inside of the original propeller spinner of the Spirit of St. Louis Lindbergh also insisted that unnecessary weight be eliminated, even going so far as to cut the top and bottom off of his flight map. He carried no radio in order to save weight and because the radios of the period were unreliable and difficult to use while flying solo. Also, although he was an airmail pilot, he refused to carry souvenir letters on the transatlantic journey, insisting that every spare ounce be devoted to fuel. The fuselage was made of treated fabric over a metal tube frame, while the wings were made of fabric over a wood frame. The plywood material that was used to build most of Lindbergh's plane was made at the Haskellite Manufacturing Corporation in Grand Rapids, Michigan.[12] A small, left-facing Indian-style swastika was painted on the inside of the original propeller spinner of the Spirit of St. Louis along with the names of all the Ryan Aircraft employees who designed and built it. It was meant as a message of good luck prior to Lindbergh's solo Atlantic crossing as the symbol was often used as a popular good luck charm with early aviators and others.[Note 2] The inside of the original propeller spinner can be viewed at the National Air and Space Museum. This propeller spinner was found to be cracked when Lindbergh arrived at New York prior to his transatlantic flight. The propeller spinner that is on the Spirit of St. Louis now was hastily made in New York to replace the cracked original and was on the aircraft during the transatlantic flight. Later history and conservation Ten-cent US Air Mail stamp honoring Capt. Charles Lindbergh and the Spirit of St. Louis; issued June 11, 1927. (Scott C10) Lindbergh's New York-to-Paris flight made him an instant celebrity and media star. In winning the Orteig Prize, Lindbergh stirred the public's imagination. He wrote: "I was astonished at the effect my successful landing in France had on the nations of the world. It was like a match lighting a bonfire."[13] Lindbergh subsequently flew the Spirit of St. Louis to Belgium and England before President Calvin Coolidge sent the light cruiser Memphis to bring them back to the United States. Arriving on June 11, Lindbergh and the Spirit were escorted up the Potomac River to Washington, D.C., by a fleet of warships, multiple flights of military pursuit aircraft, bombers, and the rigid airship Los Angeles where President Coolidge presented the 25-year-old U.S. Army Reserve aviator with the Distinguished Flying Cross.[14] On the same day, the U.S Post Office issued a commemorative 10-cent "Lindbergh Air Mail" stamp depicting the Spirit over a map of its flight from New York to Paris, and which was also the first stamp issued by the post office that bore the name of a living person. Over the next 10 months, Lindbergh flew the Spirit of St. Louis on promotional and goodwill tours across the United States and Latin America. According to the published log of the Spirit, during his 3-month tour of the US, he allowed Major Thomas Lamphier (Commander of the 1st Pursuit Squadron, Selfridge Field) and Lieutenant Philip R. Love (classmate in flight school and colleague of Lindbergh's in the airmail service of Robertson Aircraft Corporation) to pilot the Spirit of St. Louis for ten minutes each on July 1 and August 8, 1927, respectively. These two are apparently the only persons other than Lindbergh who ever piloted the Spirit of St. Louis.[15] The Spirit at the National Air and Space Museum. Just one year and two days after making their first flight at Dutch Flats in San Diego, California, on April 28, 1927, Lindbergh and the Spirit of St. Louis flew together for the final time while making a hop from St. Louis to Bolling Field, in Washington, D.C., on April 30, 1928. There he presented his monoplane to the Smithsonian Institution where for more than eight decades it has been on display, hanging for 48 years (1928–76) in the Arts and Industries Building and today hanging, since 1976, in the atrium of the National Air and Space Museum alongside the Bell X-1 and SpaceShipOne. At the time of its retirement, the Spirit had made 174 flights, totaling 489.28 hours in the air [16] While in other respects the Spirit of St. Louis appears today much as it appeared on its accession into the Smithsonian collection in 1928, the gold color of the aircraft's aluminum nose panels is an artifact of well-intended early conservation efforts. Not long after the Spirit's arrival in 1928, Smithsonian officials began to notice that the varnish on the Spirit's nose panels was deteriorating. In 1930, the Smithsonian decided to repaint the Spirit's nose panels in a color closer to the original. The new color was a light tan, and the original silver appearance the next time the aircraft is taken down for conservation.[17] However, the Smithsonian has subsequently reversed this stance, deciding that the golden hue on its engine cowling will remain, as it is part of the aircraft's natural state after acquisition and during its years on display. 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