F-86 "Sabre"

The F-86, the US Air Force's first swept-wing jet fighter, made its initial flight on October 1, 1947. Originally designed as a high-altitude day fighter, it was subsequently redesigned into an all-weather interceptor (F-86D) and a fighter bomber (F-86H). Armed with six 50 caliber machine guns, the Sabre pilot had to be in visual contact with the enemy in order to attempt a shoot-down, thereby making it the last true 'dogfighter' in the Air Force inventory. Before production ended, nearly 10 000 Sabres had been produced in 20 different variants (including the Navy FJ series known as the Fury), with five different engines. . Some of these variants had major design differences; consequently, the F-86 must be considered as a whole family of related aircraft.

During its long service life, the F-86 formed a part of the air forces of 24 different countries. As late as 1980, eight Developing nations still included a number of F-86 fighters in their inventories. Production lines were established in four foreign countries, with the last aircraft coming from the Japanese line in 1961. The Sabre saw extensive service with the USAF during the Korean war, in which it achieved an outstanding exchange ratio of nearly 14 to I in combat with the Soviet-built MiG-15. Surely the F-86 must be ranked, along with its illustrious World War 11 ancestor the P-51 Mustang, as one of the great fighter aircraft of all time.

The F-86 Sabre was originally designed for the US Navy in 1945 as a straight-winged jet fighter, and was derived from the XJ Fury. North American Aviation, already famous for its P-51 Mustang and B-25 Billy Mitchell bomber, was put under contract by the US Army Air Force to produce a new jet fighter. Utilizing information captured from the Germans, innovative technologies were employed in transforming the straight-winged XFJ-1 into the swept-wing F-86 Sabre that would dominate the skies over Korea in the 1950s.

The Sabre represented many firsts in technology and design. Swept-wing configuration has become a standard for jet-powered aircraft. The then revolutionary but now commonplace 'flying tail' allows the aircraft excellent maneuverability at high altitudes. In addition, the Sabre employs a hydraulic system for the movement of the flight controls, eliminating the excessive control stick forces necessary to maneuver other types of airplanes at high speeds.

Identifying features of the F-86 are the graceful sweptback wing and the nose inlet located in the fuselage. The 4.78-aspect-ratio wing of 35° sweepback was derived from captured German data for the advanced Messerschmitt fighter under design study at the time hostilities ended. Streamwise airfoil-section thickness ratios varied from 9.5 percent at the root to 8.5 percent at the tip.

Pitch-up was prevented on many versions of the aircraft by full-span leading-edge slats. As on the Messerschmitt Me 262, deployment of the slats was automatically initiated at the correct angle of attack by aerodynamic loads acting at the leading edge of the wings. On some versions of the aircraft, the slats were replaced by a sharp, extended-chord, cambered leading edge. Single-slotted high-lift flaps and outboard ailerons were incorporated in the trailing-edge portions of the wing. The ailerons were hydraulically actuated, as were the horizontal-tail surfaces, which, on the F-86E, consisted of a movable stabilizer with linked elevator. Some versions of the F-86 had an all-moving, slab-type horizontal tail with no elevator. Greater control effectiveness is possible at high-subsonic and supersonic Mach numbers with the all-moving horizontal tail, and this arrangement was to become standard on future transonic/supersonic fighters. The hydraulically actuated controls of the F-86E were of the fully powered, irreversible type with artificial control feel provided for the pilot. Fully powered, irreversible controls aid in eliminating such instabilities as aileron and rudder buzz, in addition to permitting maximum deflection of the control surfaces without requiring excess physical effort on the part of the pilot. These

controls differ from the hydraulically boosted [294] controls used on some early versions of the F-86, as well as on other aircraft. In a boosted control system, the pilot is still directly linked to the aerodynamic control surfaces, but his strength is augmented by a hydraulic booster. Dive brakes were mounted on either side of the fuselage behind the wing.

Another identifying feature of many versions of the F-86 was the fuselage nose-inlet installation. Inlet air was ducted under the cockpit and delivered to the turbojet engine located behind the pilot; the exhaust nozzle was at the rear end of the fuselage. To minimize the depth of the fuselage in the cockpit area, the shape of the duct leading from the inlet to the engine was changed from a circular to an elliptical shape with the long axis being in the horizontal plane. In the all-weather interceptor versions of the aircraft, notably the F-86D, K, and L models, the distinctive nose inlet was replaced by a chin installation to provide space in the nose for the necessary radar gear. In contrast to other F-86 variants, the all-weather interceptor models were equipped with afterburning engines to provide the high rates of climb and high-altitude capability necessary to execute interception missions.

Armament of the fighter versions of the aircraft consisted of 3 .50caliber machine guns buried in each side of the fuselage near the nose and provisions for carrying 2 1000-pound bombs or 16 5-inch rockets on the wings. Interceptor versions of the aircraft carried 24 2.75-inch rockets mounted on a retractable tray contained in the bottom of the fuselage. The tray extended only long enough to launch the rockets. Environmental control in the cockpit consisted of air-conditioning, heating, and pressurization; in addition, the pilot was equipped with an ejection seat.

The thrust-to-weight ratio of the F-86E was about the same as that of the P-59A. Yet, as compared with the earlier aircraft, the Sabre showed a speed advantage of nearly 300 miles per hour at sea level. A smaller wing area, wing sweepback, and thinner airfoil sections, together with careful attention to aerodynamic design, were responsible for the large increment in maximum speed between the two types. Also, improved engine performance, not reflected in the values of static thrust given in the table, no doubt played a role in the superior performance of the F-86. Drag area was a little greater for the F-86 than for the P-80 by an amount that corresponds closely to the difference in wing area of the two aircraft. As would be expected, the zero-lift drag coefficients were about the same for both aircraft. Comparison of values of the maximum lift-drag ratio shows the P-80 to have had the advantage by about 17 percent; this difference is primarily due to the lower wing aspect ratio of the F-86. Although the Sabre was strictly a subsonic aircraft, low-supersonic speeds could be achieved in a shallow dive. Flight through Mach 1.0 first took place on April 26, 1948.

The Sabre was delivered to the Air Force in 1948. The first production model flew on May 20, 1948, and on September 15, 1948, an F-86A set a new world speed record of 670.9 mph. Originally designated as the F-86A, the Sabre would undergo a number of changes resulting in a variety of model designations.

Known for its combat role in the Korean conflict, this aircraft was single-handedly responsible for turning the tide of the air war in favor of the United States. The total number of F-86 aircraft lost as a result of enemy action offered ample opportunity for communist forces to obtain this aircraft intact or in pieces significant enough to be studied and technology exploited under the Sharashka camp system. In 1953, the Air Force estimated that 75 percent of the F-86 losses were considered losses that might have compromised USAF technological advances. In fact, Soviet efforts to capture and fly US aircraft were successful. On at least one occasion, American pilots reported at least one F-86, painted in communist colors and protected by MIG-15s, was flown against US aircraft.

As a day fighter, the airplane saw service in Korea in three successive series (F-86A, E, and F) where it engaged the Russian built MiG-15. The F-86 Sabre was introduced in November 1950 and rushed to Korea to challenge the tactical edge of the MiG-15. The MiG's pilots were very good, being

(for the most part) veteran Russian fliers. But the USF soon had a counter to the MiG-15-the superb F-86A (and later, F-86E/F) Sabre. Many of the Sabre pilots were veterans of World War II and their expertise showed. Soon the Sabres and MiGs were mixing it up over northwest Korea, an area that became known as "MiG Alley." On December 17, 1950, Lt. Col. Bruce Hinton was the first Sabre pilot to score the first of an estimated 818 MiG-15 kills.

A General Electric J47-27 engine powered the F-86F; producing 6,000 pounds of thrust the aircraft can achieve a speed of 695 mph and can exceed the speed of sound in a shallow dive. It is capable of climb rates up to 10,000 feet per minute and can fly as high as 50,000 feet. The -F was used both as an air superiority fighter and fighter-bomber during the latter stages of the war; replacing the F-80 and F-51 aircraft still being used in the Korean combat in 1952.

While the war turned into a stalemate on the ground, MiG Alley remained a hot spot throughout the war. For a time the B-29s continued bombing targets in northwest Korea by day, but when MiG-15s shot down five Superfortresses in a week in October 1951, the big bombers began attacking only at night. Day after day, though, the Sabres (joined by F-84 Thunderjets or F-80s) swept into MiG Alley to meet the MiG-15s rising from their fields in Manchuria. Although the U.S. government directed that these fields were "off limits" to the FEAF aircraft, some of these planes occasionally strayed across the border in "hot pursuit" of enemy aircraft.

By the end of hostilities, it had shot down 792 MiGs at a loss of only 76 Sabres, a victory ratio of 10 to 1. In the hands of skillful pilots, the Sabre's 10-1 Kill ratio over the MiG-15 was the best achieved in any sustained fighter campaign. Of the 40 pilots to earn the designation of 'ace' (five or more kills) during the Korean war, all but one flew the F-86 Sabre. By July of 1953, no fighter aircraft in the world could take on the Sabre without being at a disadvantage. It is no wonder the F-86 Sabre is widely acknowledged along with the P-51 Mustang and the F-4 Phantom- as one of the three great fighter aircraft in US history.

Over 9,800 F-86s were manufactured during the years of 1947 through 1957, making it the most prolific jet fighter ever produced. More than 5,500 Sabre day fighters were built in the U. S. and Canada. The airplane was also used in the air forces of twenty other nations, including West Germany, Japan, Spain, Britain, and Australia.

Warner Robins Air Logistics Center (WR-ALC) had logistics management responsibility for the guns, communications, fire control and bombing-navigational equipment installed on F-86 aircraft. From 1953 to 1958, under Project High Flight, more than 500 F-86s were processed through the WR-ALC maintenance shops to prepare them for ferrying across the Atlantic to U. S. Air Forces in Europe and our NATO allies.

Surpassed in performance in the early 1950's by the Century Series fighters, the F-86 has long been retired from the USAF operational inventory. A number are still in use as target drones and for various flight-test purposes, and at least one manufacturer uses an F-86 as a chase plane.