Model Number : F8U
Model Name : Crusader
Model Type: Fighter

In 1953 the F8U-1 Crusader won the Navy competition for the new carrier-based day fighter. It flew supersonic on its maiden flight in 1955. A Crusader set a national speed record in 1956 by flying over 1000 mph, for which it won the Thompson Trophy. In 1957 Major John Glenn flew an F8U non-stop from Los Angeles to new York, setting a transcontinental speed record. The average speed for the flight was Mach 1.1 despite three in-flight refuelings at speeds below 300 mph. In 1957 the Crusader won the Collier Trophy for its contributions to the advancement of aviation science. In 1958 Vought received the first Certificate of merit ever awarded an aircraft manufacturer by the Navy Bureau of Aeronautics for the design, development and production of a US Navy aircraft. In the Vietnam conflict the Crusader had the highest kill ratio over communist jets of any Navy aircraft. The F8U series enjoyed a long service life which was extended in the 1960s by remanufacturing and updating existing aircraft. Crusaders flew in Navy reserve units until 1987, and the French navy flew its Crusaders well into the 1990's.

Model Number : XF8U-1
Model Name : Crusader
Model Type: Fighter

With the advent of supersonic flight, military aircraft were in the forefront of the effort to expand the envelope of knowledge in this new technology. The U.S. Air Force was fast developing the "century series" of fighter aircraft when, in September 1952, the U.S. Navy's Bureau of Aeronautics issued a Request for Proposal for a carrier based day fighter capable of supersonic speed in level flight, with a "rugged construction" to withstand an arrested landing aboard the carrier at approximately 100 knots, folding outer wing panels to facilitate handling in the restricted spaces aboard ship, simplicity of maintenance, and fabricated of materials which can withstand the unfriendly atmosphere of open seas operations. Eight airframe manufacturers responded to this RFP, and the competition was quickly narrowed to consideration of the Grumman F11F and the Chance Vought XF8U-1. In May 1953 the Navy announced that the Vought design was the winner, and the real work of turning this design into hardware began.

On 29 June 1953, the company received an order to build two prototype aircraft, designated as XF8U-1, and by February 1955, the first of these was ready to transport aboard an Air Force C-124 Globemaster to the U.S.A.F. Flight Test Center at Edwards Air Force Base in California. There, on the morning of 25 March 1955, only 21 months after design work had begun, the aircraft (Bu.No. 138899) lifted off the dry lake bed on its first flight with Vought chief test pilot John Konrad at the controls. The 51-minute flight entered the U.S.Navy into the era of supersonic operations by

becoming the first aircraft ever to achieve supersonic flight on its first flight - the first of many such record setting achievements during the long service life of the Crusader, as the F8U series had been named.

The XF8U-1 design effort was not without its tense moments, with the most significant program glitch coming at the mid-point of design in 1954.

Connie Lau, Chief Aerodynamicist for the F-8U program came from the Cornell High Speed Wind Tunnel with the news that the airplane, as configured showed too much drag and would not meet the maximum speed guaranteed to the Navy. This was a bombshell which stopped the program in its tracks. The data was reviewed and confirmed. The John Whitcomb “Area Rule”, which consisted of a specific distribution of cross sectional area to reduce drag, was applied to the fuselage contours. This necessitated a complete redesign of the fuselage structure and the accompanying mechanisms and equipment installed therein.

Most any other Aerospace firm would have asked the customer for a schedule extension but that was not Vought’s way of doing business. Instead, Engineering was put on a 7 day, 80 hour work week to make the changes with a corresponding effort by the Manufacturing department. First flight date was met and the airplane met its maximum speed guarantees with a bit to spare.

The second XF8U-1, Bu.No. 138900, soon joined the flight test program at Edwards Air Force Flight Test Center in California, and together these two aircraft successfully completed the test program in superb fashion. On 25 October 1960, after 67 months of operations and 508 flights, XF8U-1 Number 1 was transferred to the Smithsonian’s Air and Space Museum where the aircraft was placed in storage at the Silver Hill, Maryland for many years. XF8U-1 Number 2 was scrapped after 460 flights.

Dimensions	
Wingspan	35.67 ft
Overall Langth	54.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	
Gross Weight	
Useful Load	
Fuel Capacity	1188 gal
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P11	
Rating Thrust	10900 lb
Rating Thrust with afterburner	14780 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level with afterburner	680 mph

Landing Speed, Sea Leavel	
Stall Speed, Sea Level	125 mph
Initial Rate-of-Climb with afterburner	14240 ft/min
Cruise Speed, Sea Level	
Range at Cruise Speed	800 miles
Service Ceiling	40600 ft
Absolute Ceiling	
Crew: 1	
Armament:	

Model Number : F8U-1(F-8A), F8U-1E(F-8B)
Model Name : Crusader
Model Type: Fighter

F8U-1 (F-8A)

With the rapid pace of the XF8U-1 flight test program, and the almost non-existent requirement for major modifications to the aircraft as a result of flight test, fabrication of the production

version of the Crusader followed that of the prototypes virtually uninterrupted, beginning at a rate of three per month, and soon accelerating to a rate of eight per month. As a result, the first production aircraft, F8U-1Bu.No. 140444 made its first flight on 30 September 1955, six months and five days after the initial flight of XF #1, and the production line continued to roll until 25 November 1963 when the last Crusader , F-8E(FN) Number 42 (Bu.No. 151773) completed final assembly.

F8U-1E (F-8B)

On 3 September 1958, BuNo. 145318 flew from NAS Dallas as the prototype model of the F8U-1E with a modified avionics system. This modification replaced the AN/APG-30 gun-ranging radar system with the AN/APS-67 radar scanner in the nose section of the aircraft. The change gave the Crusader a limited all-weather capability, and expanded its mission beyond the pure “day fighter” requirements of the original version. This version of the Crusader was identifiable externally by the new radome configuration - an all plastic radome in lieu of the combination metal/plastic radome of the F8U-1. The new radome had a small glass window on the lower aft surface which permitted a gun camera to record the results

of gunfire runs. In all other respects, the F8U-1E was identical to the F8U-1. One-hundred-thirty of the F8U-1E models were built.

Dimensions	
Wingspan	35.67 ft
Overall Langth	54.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	
Gross Weight	
Useful Load	
Fuel Capacity	
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P12	
Rating Thrust	9700 lb
Rating Thrust with afterburner	16600 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level with afterburner	
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament: Four-20mm Colt MK-12 cannons with 144 rounds per gun 2.75 in. Mighty Mouse folding fin rockets.	

Model Number : F8U-1P(RF-8A)
Model Name : Crusader
Model Type: Fighter

At virtually the same time as the final design program was underway on the production version of the F8U-1 at the Vought plant in Dallas, a parallel design was initiated for a photo-reconnaissance version of the aircraft. The photo Crusader was, from the wing leading edge aft, essentially the same as the fighter version. The nose section and the forward portion of the mid section were redesigned to remove all armament provisions and all fire-control systems and replace them with camera stations and night photo flare pods, along with all the control systems associated with their operation.

The sides and bottom of the fuselage were "squared off" to provide flat surfaces for the electrically heated optical glass windows required for the desired photographic quality. These flat surfaces were then faired into existing contour around the air duct inlet, the nose cone and the canopy enclosure, and into the fuselage mid section at the forward end of the main landing gear wells. The "area rule" concept was applied to this new configuration, which resulted in a slight bump on the top surface of the fuselage aft of the canopy and extending over the top of the forward portion of the wing. This re-contouring of the fuselage allowed the inflight refueling probe to be completely submerged into the fuselage and covered with a flush door, eliminating the blister door used on the fighter.

Camera Station 1 was located on the lower surface below the cockpit and forward of the nose landing gear well. A small "bump" was faired around a slanted forward-looking optical window. The station mounted an oblique camera which photographed the aircraft's flight path on a 16-mm movie camera. The original concept called for Camera Station 2, actually the aft-most bay, to mount three trimetrogen cameras, providing horizon-to-horizon coverage. With experience and experimentation, a more common array of cameras was developed. Stations 3 and 4, the middle bays, mounted two cameras giving vertical and oblique coverage. The most common angles of obliquity used were 5, 15 and 30. The cameras selected by the Navy were manufactured and furnished by Chicago Aerial and were designated as the KA-66 used at Station 2, KA-51, -53 and -62 at Stations 3 and 4, and KA-45 or -51 at Station 1. In the later life of the photo Crusader, another oblique forward looking camera was mounted at Station 1 which took continuous photos of approaches to targets in Viet Nam. These photos were used by bomber pilots to familiarize themselves with the terrain they would encounter in upcoming missions.

The prototype of the F8U-1P was originally built as the 32nd production F8U-1, BuNo 141363, and after modification to the photo configuration it made its initial flight on 17 December 1957. Following a short test program to verify all operating systems that were unique to the photo Crusader, the aircraft was delivered to the Navy and served its entire life as a photo- recce Crusader.

The F8U-1P photo reconnaissance version of the Crusader was the aircraft in which Major John Glenn set a transcontinental speed record (Mach 1.1 average speed) in 1957. The F8U-1P served in the fleet long after the fighter version was retired.

Dimensions	
Wingspan	35.67 ft
Overall Langth	54.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	
Gross Weight	
Useful Load	
Fuel Capacity	
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P4A	
Rating Thrust	9700 lb
Rating Thrust with afterburner	16600 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level with afterburner	
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament:	

Model Number : F8U-1T(TF-8A)
Model Name : Crusader
Model Type: Trainer

The U.S. Naval Air Training Command prompted an interest by Vought in a two-seated version of the Crusader as an advanced pilot trainer. An extensive design effort was required to retain as much “commonality” as possible, and still incorporate all of the customer’s requirements into the aircraft with a minimum loss of performance or increase in weight. The 77th production F8U-1, BuNo 143710, which had previously been modified to the F8U-2NE configuration, became the prototype and made its first flight on 6 February 1962 after an extensive modification program.

A bold decision was made at the onset of design, that of maintaining the same length as the basic F-8 single place airplane. This required raising the upper profile by 15 inches. Two of the ammunition cans were deleted from the ammunition compartment aft of the cockpit. The weight and balance consideration also dictated that two of the 20-mm cannons be removed from the gun bays...These were the upper guns on each side. The rear (instructor) pilot’s eye position was raised 15 inches above that of the forward (student) pilot to provide adequate visibility, particularly in the takeoff and landing configurations. Both cockpits were equipped with a complete set of flight controls and instruments. A glass blast shield was installed behind the forward Martin Baker ejection seat to protect the instructor pilot in case of canopy loss or high-speed ejection. The standard Crusader canopy was replaced with a large canopy that covered both cockpits and was powered open and closed by an electrical actuator.

To facilitate operation of the aircraft at small auxiliary airfields, a landing parabrake (parachute) was installed in a domed housing at the base of the rudder. When use of the parabrake was required to stop the rollout on one of these small fields, the pilot could actuate the system. When actuated the spring-loaded door on the aft end of the parabrake housing opened and the triple-canopied parachute deployed, significantly shortening the rollout.

The F8U-1Ts first flight was on 6 February 1962. Extensive demonstrations were conducted for several years, but no buyers were found for a new jet trainer

Dimensions	
Wingspan	
Overall Langth	
Height	
Weights and Capacities	
Empty Weight	
Gross Weight	

Useful Load	
Fuel Capacity	
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P20	
Rating Thrust	13000 lb
Rating Thrust with afterburner	18000 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed	1.9 mach
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	
Crew: 2	
Armament:	

Model Number : F8U-2(F-8C)
Model Name : Crusader
Model Type: Fighter

The development of the Pratt and Whitney J57P-16 engine, which delivered 13,000 pounds of static thrust at sea level and 17,500 pounds in afterburner, resulted in a request from the Navy for a further modification of the Crusader series. The fourth production F8U-1, BuNo 140477, was reworked as the prototype for this modification, designated as the F8U-2. It made its first flight on 20 August 1957 at NAS Dallas. The first production F8U-2 (BuNo 145546) made its first flight one year later, on 29 August 1958 with Vought test pilot John Omvig at the controls.

The higher-thrust-rated engine P-16 engine resulted in an increase in the maximum speed of the aircraft to 960 knots. This, combined with a nagging yaw problem at high altitude experienced on the

earlier F-8's, required a change to increase directional stability. The cure was to add two short stabilizing ventral fins to the lower aft fuselage, which solved both problems beautifully. In addition, the wing span was reduced by removing three inches from the end of each outer panel, resulting in a new wing span of 35 feet 2 inches.

Another characteristic of the new more powerful version of the engine was a significantly higher afterburner tailpipe exhaust temperature. To cool the structure in this area, two low-profile scoops were added to the upper aft surface of the titanium tail cone directly aft of the four existing flush oval spring-loaded cooling doors. In flight, ram air was ingested by the scoops, while during ground operations, and at some low power settings, negative pressure in the engine bay forced the spring-loaded doors to open and admit cooling ambient air.

The Martin-Baker F-5 fully automatic, so-called "zero-zero" (zero altitude-zero airspeed capability) ejection seat was factory installed in this model. The F8U-2 was also equipped with a "Y"- shaped dual Sidewinder launching rail mounted on the existing attach points on both the port and starboard upper fuselage, giving the aircraft an increased air-to-air capability of four missiles in lieu of two. Many operators did not feel that the increased drag and decreased maneuverability and range were worth the increase in firepower, so the four-Sidewinder configuration saw limited operational use.

Dimensions	
Wingspan	35.17 ft
Overall Langth	55.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	18950 lb
Gross Weight	
Useful Load	
Fuel Capacity	1348 gal
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P16	
Rating Thrust	10700 lb
Rating Thrust with afterburner	16900 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	1105 mph
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	

Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament: 4 - 20mm Colt MK-12 cannons with 144 rounds per gun 2/4 AIM-9/9D Sidewinder missiles 4/8 Zuni rockets in 2 rocket packs	

Model Number : F8U-2N(F-8D)
Model Name : Crusader
Model Type: Fighter

In early models of the Crusader, the avionics systems provided only a limited all-weather or night capability. The Navy's desire to expand the usability of the aircraft resulted in a request to add avionics equipment to the aircraft to provide these capabilities, creating the F8U-2N model. The increased electrical load requirements of the new avionics equipment required a larger generator. Development of the J57-P20 engine by Pratt and Whitney provided a new gear box on the nose spinner of the engine. A constant-speed drive transmission developed by the Sundstrand Corp. was adapted to fit onto this gearbox , and a new 20-kva generator was mounted on the CSD. This installation permitted the generator to operate at its rated rpm over the entire speed range of the engine, from idle to full military.

The new engine model had the same basic thrust as the -P16, but was uprated to 18,000 pounds in afterburner which gave the aircraft a top speed of Mach 1.9. The new AN/APQ-83 radar was mounted in the nose cone to give the aircraft night target acquisition capabilities, and an AN/AAS-15 infrared scanner mounted just forward of the bullet-proof glass in the windscreen assisted in target identification after acquisition. A company- developed push-button "cruise relief" autopilot system reduced the pilot's mundane workload during much of his flight time, permitting him to concentrate his attention more on his mission.

The weapons systems in the -2N were basically the same as in the -2, except that the Mighty Mouse rocket pack on the lower surface of the fuselage (see F8U-1 (F8-A) description) was removed, and this space was incorporated into the main fuel cell cavity, increasing the fuel capacity to 1,348 gallons and combat radius to 394 nautical miles. With the addition of the various equipment packages and fuel, and the deletion of the rocket pack, there was a net weight gain that pushed the gross weight of the -2N up to 29,000 pounds.

F8U-2N No.1, BuNo 147035, made its first flight on 16 February 1960 at NAS Dallas, and the first production fleet delivery was made on 1 June 1960. Many pilots considered the -2N the best of the Crusader series. The combination of speed, range, weapons variety, avionics improvements, and maneuverability made it their idea of the ideal "last of the gunfighters".

Dimensions	
Wingspan	35.67 ft
Overall Langth	55.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	19800 lb
Gross Weight	29000 lb
Useful Load	
Fuel Capacity	1348 gal
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P20	
Rating Thrust	12400 lb
Rating Thrust with afterburner	19500 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	1.9 mach
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	454 miles
Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament: 4 - 20mm Colt MK-12 cannons with 144 rounds per gun 2/4 AIM-9/-9D Sidewinder missiles 4/8 Zuni rockets in 2 rocket packs	

Model Number : F8U-2NE(F-8E)
Model Name : Crusader
Model Type: Fighter

Continuing interest by the Navy in upgrading the Crusader series and expanding its role to include an ever growing list of missions led to the development of the -2NE. F8U-1 BuNo 143710 was modified to serve as the prototype of the -2NE and made its first flight on 30 June 1961. The inclusion of the

AN/APQ-94 search and acquisition fire control radar, with its larger dish (21" diameter) required a larger nose cone, which was circular in cross section and longer than any previous F-8 nose cones, increasing the overall length of the aircraft by 3". The larger nose cone diameter was faired into the existing fuselage contour between the windscreen and the air duct inlet. This new contour required a new pitot-static system with the pitot tube mounted in the forward point of the nose cone, and the static ports installed in a fiberglas "belly band" plenum chamber wrapped around the lower fuselage.

The growing list of missions envisioned for the F8U-2NE included a limited attack mission, and close ground support. To provide for carrying the weapons required by these missions, one set of "hard points" was provided on each wing center section, approximately midway between the fuselage and the wing fold. Removable pylons were mounted on these hard points, providing the capability of carrying a wide variety of weapons, including the AGM-12 Bullpup missiles, 30-missile Zuni rocket pods, standard iron bombs up to and including the MK-84 2,000-pound bomb, or an additional 600 gallons of fuel. Control and guidance equipment for the Bullpups was mounted on the upper surface of the wing center section and enclosed in a "humpback" fairing.

Dimensions	
Wingspan	35.67 ft
Overall Langth	55.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	19800 lb
Gross Weight	
Useful Load	
Fuel Capacity	1348 gal
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P20	
Rating Thrust	11400 lb
Rating Thrust with afterburner	18000 lb

Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	1.9 mach
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament: 4 - 20mm Colt MK-12 cannons with 144 rounds per gun 2/4 AIM-9/-9D sidewinder missiles 4/8 Zuni rockets in 2 rocket packs 2 wing store pylons - multiple missile, rocket, bomb load configurations.	

Model Number : F8U-3
Model Name : Crusader III
Model Type: Fighter, Interceptor

Although its appearance is similar to previous F8Us,the XF8U-3 was an entirely new aircraft larger in size and with a bigger powerplant than F8U-1 & -2 aircraft.

The first flight of the XF8U-3 was made at Edwards Air Force Base on June 2, 1958, with test pilot John Konrad at the controls. The flight lasted 48 minutes and during which the aircraft attained a speed of 350 knots at 20,000 feet. During subsequent flights, the XF8U-3 achieved a speed of Mach 2.39 (approximately 1,601 mph) and was still accelerating at 0.1 Mach every 17 seconds. This was extraordinary even when compared to the performance of today's aircraft.

The reason for not flying faster was the heat limitations on the plexiglas windshield, which was approaching an external temperature of 325 degrees F. A design for a laminated glass windshield was under way during the flight test program. This would have allowed the aircraft to achieve its maximum speed potential. It was the opinion of all the test pilots, from the technical data available, that the aircraft could attain a speed close to Mach 2.9 at 35,000 feet (1,950 mph)and there is little doubt that this speed could have been attained. This would have easily made the F8U-3 the fastest jet-propelled fighter– interceptor in the world. This performance, however, could not be

maintained for extended periods due to heat soak considerations and the effect of high temperature on the aircraft structure.

Another area of outstanding performance was acceleration., The F8U-3, powered by the Pratt & Whitney J75-P-6 afterburning engine was the fastest accelerating fighter in the world in acceleration from subsonic to supersonic speeds. From a speed of Mach .98 at 35,000 feet to Mach 2.2, it would take only 3 minutes and 54 seconds compared to a time of 9 minutes for a more conventional fighter of that era. The maximum altitude capability for this aircraft, was also impressive. From a sustained flight altitude of 65,000 feet the aircraft could zoom to an altitude approaching 90,000 feet. One can only imagine what performance the F8U-3 would have achieved with the addition of a rocket engine proposed by the U.S. Navy. However, this configuration never reached the flight test stage due to the cancellation of the rocket project before the installation of hardware.

Three XF8U-3's were flown during the flight test period, which only lasted a short seven months. During this time, approximately 150 hours was logged on the No. 1 airplane and approximately 50 hours on No. 2. Flight time for No. 3 is unknown. In early December 1958, all XF8U-3 funding was cancelled and the program was terminated. This was a severe disappointment to Chance Vought even though it was not totally unexpected since the Navy requirements had changed significantly during the period of the XF8U-3 development. The Vought airplane had been designed to meet the original Navy requirements for a single-place, fighter–interceptor, while the competing McDonnell F4H-1 Phantom was a two-place, twin-engine, fighter–bomber. The climate had changed; the Navy now had the aircraft that satisfied their latest philosophy, and the F4H-1 became the Navy's choice.

Following the cancellation of the program, the three flight test aircraft had a future life with the National Aeronautics and Space Administration (NASA). They, along with a variety of other aircraft of various sizes, were acquired for research into the sonic-boom phenomenon. The No.1 airplane began its test life at NASA Langley, Virginia on May 26, 1959 and logged an additional 156.6 hours flight time. During this time, the aircraft flew at speeds up to Mach 2.2 at altitudes of 60,000 feet. The No. 2 aircraft also participated in these tests, while The No. 3 aircraft was used in autopilot and flight systems work at NASA Ames and Edwards AFB.

Model Number : F-8E(FN)
Model Name : Crusader
Model Type: Fighter

When in early 1962 the air arm of the French Navy, Aeronautique Navale, began looking for a replacement aircraft for their aging Aquilons, their choice eventually fell on the F-8E, primarily because of the relatively low cost, the high performance characteristics, and the fact that the assembly line in Dallas was still open. Operation of the aircraft from the smaller French carriers, the Clemenceau and the Foch, dictated a number of design changes required to achieve a lower approach and landing speed. To accomplish this, a double-acting leading edge droop was designed. This redesign effectively split the existing droops into two sections along the entire span of the wing. The forward segment of the center section drooped 35 and the aft segment drooped 8.9. The forward segment of the outer panel drooped 35 and the aft segment drooped 20. In addition, the trailing edge flaps drooped 40 versus 20 on the U.S. Navy Crusader. A third design change decreased the travel of the two-position wing from 7 to 5. With the lower landing speed, increased longitudinal control authority was required. This was obtained by increasing the area of the unit horizontal tail surfaces by installing a cuff over the leading edge, which effectively moved the leading edge forward approximately 4" at the inboard end of the surface, and faired it in with the leading edge of the existing tip casting.

The increased camber of the FN wing created by the new double leading edge droops, and the forty-degree flaps and ailerons, also decreased the airspeed at which the boundary layer air wants to become turbulent and separate from the wing surface, thereby destroying aerodynamic lift. In order to prevent this boundary layer separation, a Boundary Layer Control System was installed. This system bleeds high pressure/high temperature 16th stage air from the compressor section of the engine. This air is piped to the wing where it is forced out over the upper surface of the wing through slotted nozzles along the trailing edge of the aft droop and the leading edge of the flap and aileron. This high pressure airflow serves to keep the boundary layer attached to the wing surface , thereby increasing the airspeed at which turbulent airflow occurs. The net result of these various configuration and system changes was a reduction in the approach speed of the F-8E{FN} by approximately fifteen knots below that of the US Navy's F-8E.

The F-8E(FN) was intended to be a multi-mission fighter aircraft. To fill this requirement, the standard configuration of four 20-mm. cannons was retained, as was the fuselage-mounted dual Sidewinder pylons. Additional interceptor capabilities were provided by adding provisions to the fuselage pylon mounts to carry one French MATRA R.530 air-to-air missile on each side. The pylon mounting provisions in the F-8E wing, together with associated wiring, were retained, but no pylons were procured.

The French Navy procured 42 of these aircraft, and assigned them, twelve aircraft to each unit, to Flottilles 12F

and 14F, squadrons which had distinguished themselves during the war in Indochina during the 1950's while flying another famous Chance Vought aircraft, the F4U-7 Corsair. These squadrons were based at the naval air station at Lann-Bihoue. The depot level maintenance base was established at Base Aeroanutique Navale Cuers-Pierrefue near the naval base at Toulon. Early carrier trials aboard Clemenceau proved out,under operational conditions, all the changes that were made to the aircraft. The flight characteristics in the approach to the carrier resulted in a sink rate of 11 feet per second and a g-load of less then 3.5 during the arrestment both much lower than with any of the earlier models of the Crusader

Dimensions	
Wingspan	35.67 ft
Overall Langth	55.25 ft
Height	15.75 ft
Weights and Capacities	
Empty Weight	
Gross Weight	
Useful Load	
Fuel Capacity	1348 gal
Oil Capacity	
Powerplant Characteristics	
Type: Pratt & Whitney J57-P20	
Rating Thrust	11400 lb
Rating Thrust with afterburner	18000 lb
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level with afterburner	
Landing Speed, Sea Leavel	
Stall Speed, Sea Level	
Initial Rate-of-Climb with afterburner	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	
Crew: 1	
Armament: 4 - 20mm Colt MK-12 cannons with 144 rounds per gun 2/4 AIM-9/-9D Sidewinder missiles 4/8 Zuni rockets in 2-rocket packs	

Model Number : N19TB
Model Name : Crusader
Model Type: Flight Test Vehicle

Thought its military career is at an end, the mighty F-8 Crusader still plies the airways in mufti. Operated by Thunderbird Aviation of Phoenix, Arizona, it is the ideal flight test vehicle.

On 12 March 1987, N19TB, as she is now known, made its first flight from Deer Valley Airport in Phoenix, Arizona. The pilot on this historic occasion was Roger Moore, US Navy, Retired, of San Diego, California. Captain Moore holds the distinction of being the first pilot to receive an FAA license to fly the F-8. This initial flight was much more than a historic event, it was a ride which turned out to be much more exciting than Roger would have liked. Immediately after takeoff he noted that the airplane rolled hard left and it took all his strength to keep his unruly steed from rolling over on its back. It required him to keep both hands on the stick at all times. Power adjustment was made by momentarily releasing his left hand and “slapping” the throttle. An emergency was declared and he headed back for the runway. After a very “hairy’ ride, he was safely back on the runway. Investigation revealed a failed component in the stability system had commanded full left rudder during the entire flight. A pilot of lesser experience may not have survived the event.

Thunderbird Aviation owner, Bill Hauprich, had the N19TB built specifically to meet the needs of flight test programs requiring speeds up to Mach 1.5. With its high speed and enormous fuel capacity, it is ideally suited for this role. Bill is fond of telling of missions where F-15s and F-16s have to refuel while the F-8 waits in orbit. And he can match them in speed over the long haul.