

## F8U Crusader - F8U-1 & F8U-1E Production Aircraft Changes

Significant modifications to the production aircraft were made in the powerplant, armament, and avionics systems. The Pratt and Whitney J57-P11 engine installed in the prototype aircraft was replaced with the J57-P12 in the first thirty production aircraft. The more powerful -P4A was installed in the remainder of the F8U-1 aircraft. This engine was capable of producing 10,900 pounds of static thrust at sea level and 16,600 pounds in afterburner. The armament installed in the production version of the Crusader, the “Last of the Gunfighters”, consisted of four Colt MK-12 20-mm. cannons, two each on the port and starboard lower fuselage just below the cockpit, firing out through streamlined gun ports on the sides of the air intake duct. Ammunition cans with capacity for 144 rounds per gun were installed in a compartment just aft of the cockpit, and spent shell casings were ejected into a compartment aft of the gun bays. A single AIM-9 Sidewinder missile was carried on a launcher rail mounted on each side of the upper fuselage above and aft of the gun bays and forward and below the wing leading edge. On the lower surface of the fuselage, immediately forward of the speedbrake, a rocket pack carried thirty-two 2.75-inch “Mighty Mouse” folding-fin rockets. Numerous problems with this installation surfaced during the weapons system test program. As a result, the rocket packs were disabled and never saw service during the life to the Crusader. They were eliminated during a future modification.



The two prototype aircraft were loaded with flight test instrumentation and carried virtually no mission avionics equipment. The early production F8U-1's still had some instrumentation for such test programs as carrier suitability, weapons system test and service test — test programs that were conducted by the Navy under fleet operational conditions. The surviving aircraft from these test programs were later reconfigured to the production configuration and delivered to the fleet as operational aircraft. The true production aircraft were equipped with an AN/APG-30 gunsight-ranging radar which permitted the pilot to track a target on his cockpit radar screen. When the target was within range of the guns, and he had the target in the gunsight, he received a signal to that effect and was instructed to commence firing.



The Crusaders were originally equipped with an ejection seat designed by Vought. During the mid-1950's the U.S. Navy entered into an agreement with Martin-Baker, Ltd. in England to equip all Navy carrier-based aircraft with a version of their ejection seat. The seat as modified for the Crusader was designated as the F-5. By the time all of the modifications to the airframe were designed, it was decided that the in-station incorporation of the change would be made beginning with the F8U-2 model, and all of the F8U-1 and -1E aircraft would be modified by the Navy during their next depot-level maintenance period.

At about the same time, in September 1955, the Navy decided that all carrier-based aircraft must have the capability of receiving fuel replenishment while in flight. This was accomplished by adding an air refueling probe on the



starboard side of the fuselage, directly above the gun bays, aft of the cockpit. The probe was semi-submerged into a cavity, and covered with an elliptical blister which contained a hydraulically powered door. The probe was pivoted at the aft end and as it was extended by the Utility Hydraulic System, the forward tip of the probe telescoped forward until it was within the pilot's field of vision, approximately three feet away from the side of the canopy. In this position, he could observe the probe as he flew it into the drogue on the end of the refueling hose being trailed from the tanker aircraft. At the completion of the refueling operation, the pilot retarded the throttle to slow the aircraft and disengage from the drogue, permitting him to retract the probe

### F8U Crusader - Life Extension

During the mid-1960s, with the increasing involvement in the Vietnam war, the US Navy decided to retain a number of its "27 Charlie" class carriers, notably the



USS Shangri-La, Intrepid, Hancock, Ticonderoga and Oriskany. To equip the Air Wings which would man these carriers, the service life of many of the Crusader aircraft would have to be



extended. Vought was requested to develop a remanufacturing program for various models of the F-8 to replace fatigue-critical structural components (primarily the wing and nose landing gear strut) and reinforce other components which had reached the limits of their service life. In addition, various navigational, fire control and communications system were upgraded, and electronics countermeasures systems (ECM) were added. The following were modified:

<b>Model</b>	<b>Quantity Modified</b>	<b>Model Redesignation</b>
RF-8A	73	RF-8G
F-8B	61	F-8L
F-8C	87	F-8K
F-8D	89	F-8H
F-8E	136	F-8J

The F8U-1P (RF-8A) was the first model to be introduced into the mod program in early 1965. This group of 53 aircraft was refitted with a new wing, which included the "hard points" for carrying wing stores and fuel pods. They were also refitted with the J57-P20 engine, with its constant-speed drive and 20-kva generator. With the increased speed available from the increased thrust of the -P20, ventral fins were added to provide the required directional stability at the higher speeds. And with the increased electrical power available from the larger generator, additional and better camera configurations were available, and electric countermeasures (ECM) systems were installed in the

vertical tail. The first of the modified aircraft, re-designated RF-8G, was first flown on 31 August 1965. A second group of 20 additional RF-8A's were modified during the 1968-70 timeframe.

The next group of F-8's to enter the mod line at LTV Dallas were the F-8D which began modification in July 1967. Again the aircraft were fitted with a new 4,000-hour wing fitted with the "hard points" for carrying various weapons configurations. The guidance system for the Bullpup missile was installed on the upper surface of the wing center section, and covered with a low-profile fairing. Additional structural components were replaced or reinforced on individual aircraft as required to insure a service life compatible with the new wing life.



During 1968-69, the most extensive modifications were made on the F-8E. These aircraft were redesignated as F-8J's. As a result of the experience that the French Navy accumulated on their BLC-equipped F-8E(FN) aircraft, the US Navy elected to modify 136 of their -E aircraft to add the BLC system. This required modification to the two-position wing and the horizontal tail surfaces (see description of F-8E(FN) configuration). The F-8J was, like the F-8H, equipped to carry and fire the Bullpup missile, and had the same "humpback" fairing

on the top of the wing center section.

In December 1968, the final phases of the program got under way with the modification of the F-8B/C aircraft into F-8L/K models. The modification of these aircraft was less extensive - new 4,000-hour wings with "hard points", and revised cockpit lighting to improve the night operation characteristics. The -C/K models were fitted with ventral fins for increased directional stability, but the -B/L were only fitted with the fuselage attach fittings which would permit the future installation of ventral fins in the event of a future installation of a more powerful engine.



## F8U Crusader - Loss of [XF8U-3](#) and a New Challenge

### More Management Changes

In the 1955 to 1956 time period R.C. Blaylock was assigned as Chief Engineer (replacing Fred N. Dickerman) and W.P. Thayer was appointed Sales Manager. Some significant management changes took place in the 1956 to 1957 time frame, with the creation of several new vice president positions, including R. C. Blaylock, Vice President, Engineering, N.V. Turney, Vice President, Controller, C.E. Burt, Vice President, Production, and W.P. Thayer, Vice President, Sales & Service. B.W. Whitten was appointed Treasurer. During 1958 to 1959 other changes included the promotion of W.P. Thayer to Vice President & General Manager of Vought Aeronautics Division and the appointment of F.E. Burnham as Vice President Finance

### A Big Loss and a New Challenge

In 1955 Vought started design of the XF8U-3 Crusader III, a very high performance all-weather interceptor/fighter. Although it carried an F8 designation, it was an entirely new aircraft that was larger and had a more powerful engine than the previous F8s. First flight of the XF8U-3 was June 2, 1958.

On December 17, 1958 the Navy announced its decision to proceed with the two-engine, two-place McDonnell Phantom and cancelled the better-performing one-engine, single-place F8U-3. On December 18, 1958 the Navy announced its decision to devote its missile development funds to the submarine-launched Polaris ballistic missile and cancelled the Regulus II program. The loss of two major contracts was a very traumatic experience for the company and especially for the nearly four thousand people who lost their jobs. Some of those who remained were astonished to find themselves reassigned to studies and design of space vehicles. Their only previous exposure to spacecraft had been as children at the Saturday afternoon movies watching Buck Rogers and Flash Gordon serials. The 1960's lay just ahead, and Vought was preparing to participate in the exploration of space.

