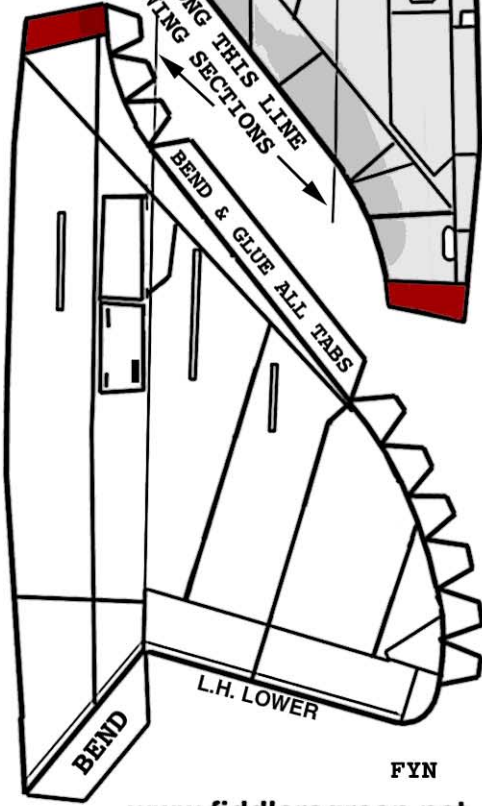
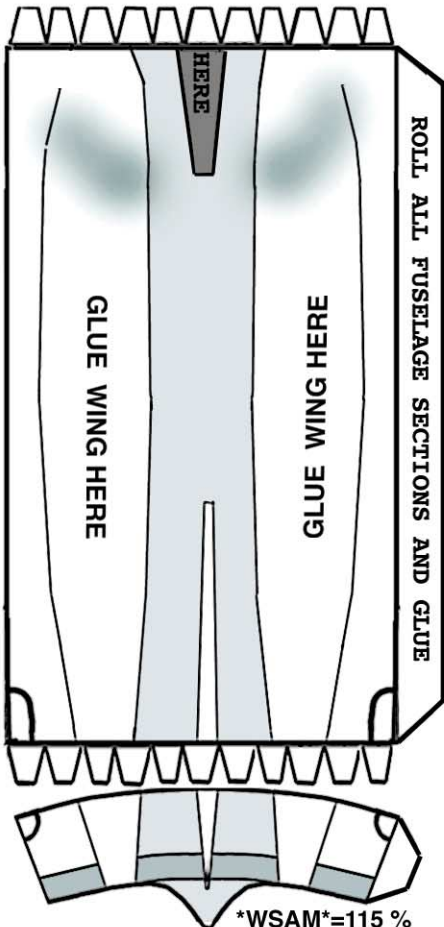
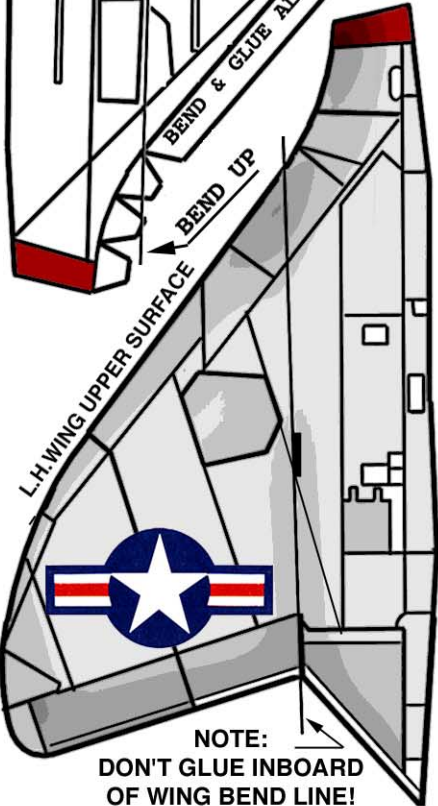
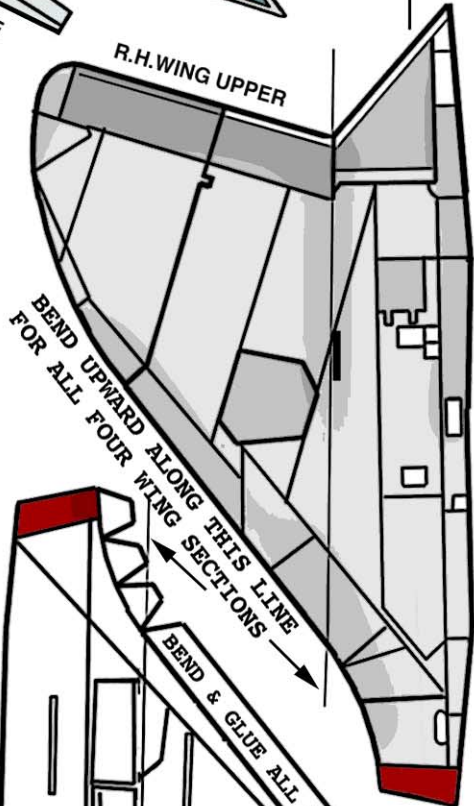
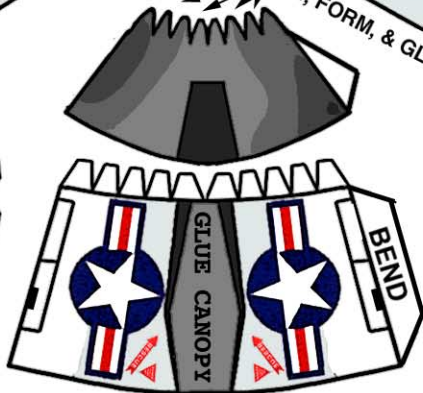
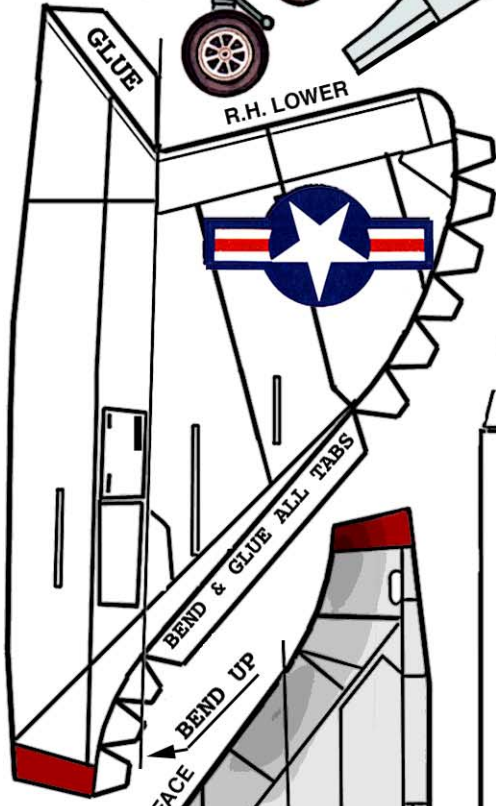
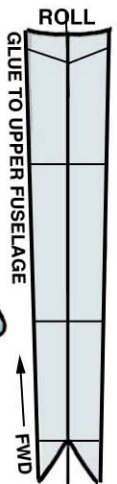
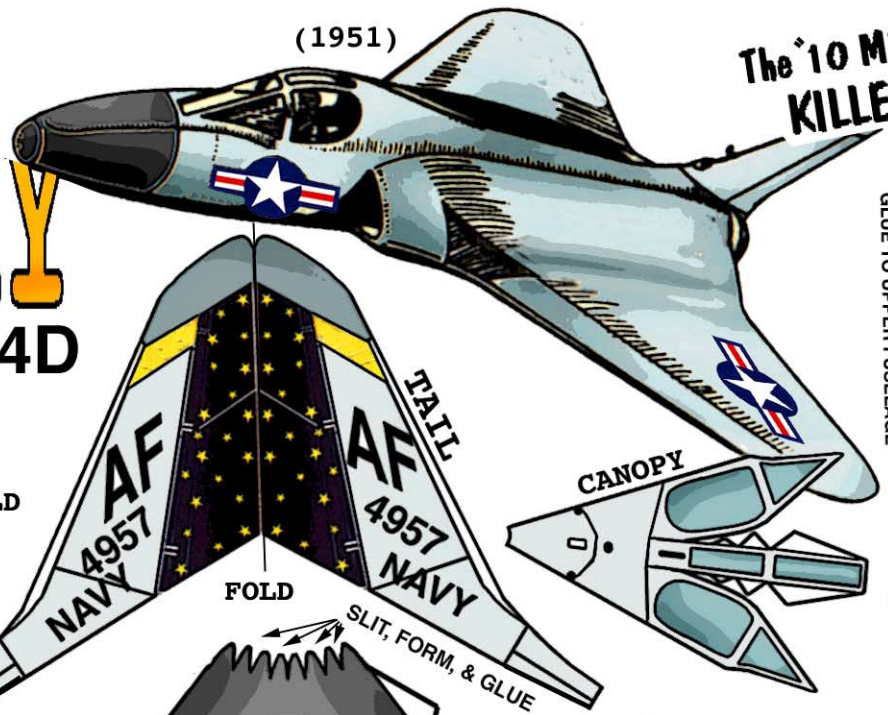
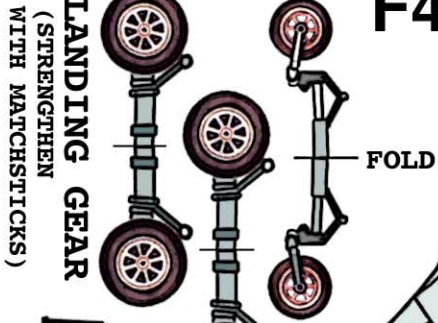


# DOUGLAS SKYRAY

(1951)

The "10 Minute KILLER"

F4D



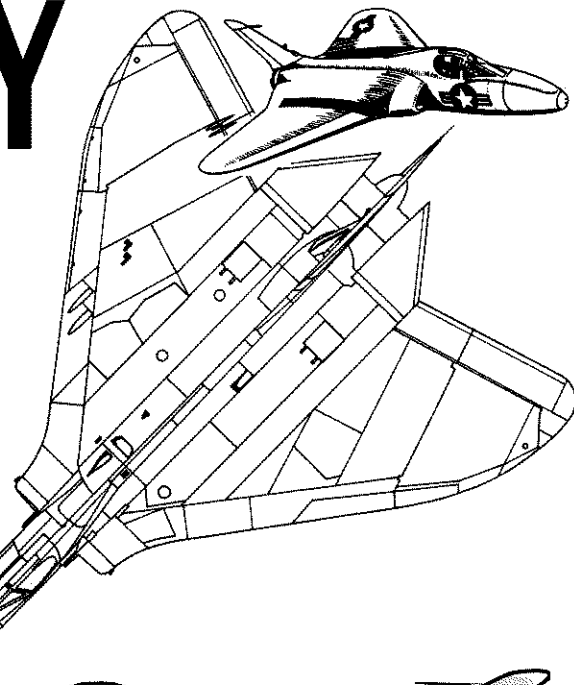
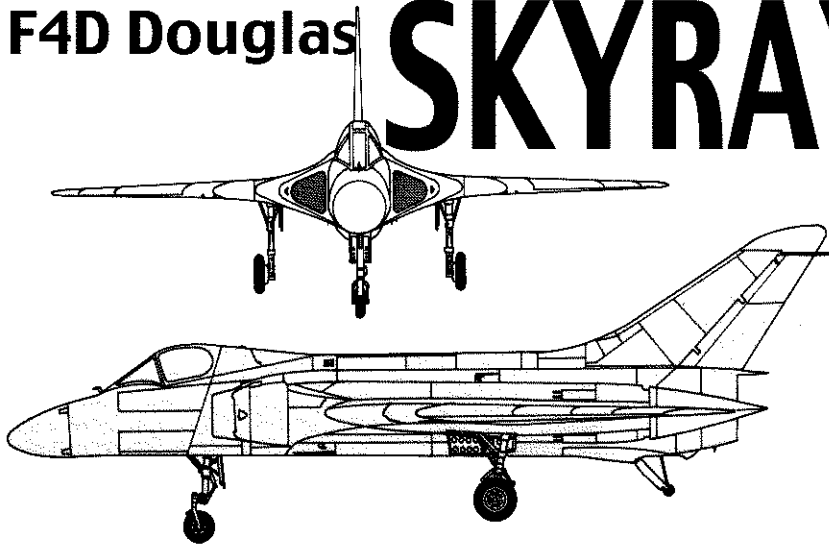
NOTE: DON'T GLUE INBOARD OF WING BEND LINE!

\*WSAM\*=115%

FYN

# F4D Douglas

# SKYRAY



**MORE ABOUT THE SKYRAY AT:**  
[www.fiddlersgreen.net](http://www.fiddlersgreen.net)

When the Navy received their first production F4D-1 Skyray, they had in their hands the first Navy fighter capable of exceeding the speed of sound in level flight. But this achievement was accomplished in a somewhat roundabout way, for when the bat-like plane first appeared, there were serious challenges to its future.

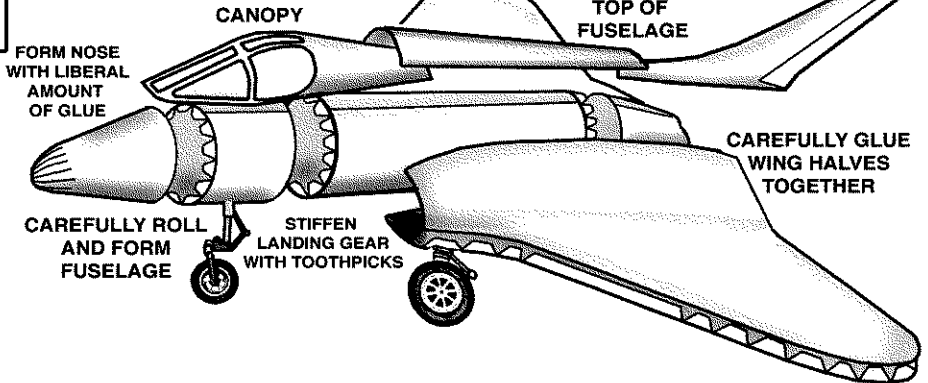
The Skyray's inception was the result of research done on the delta wing by Dr. Alexander Lippisch in Germany during World War II. The Navy's Bureau of Aeronautics had become intrigued with the possible application of such a wing on a fighter. In 1947, the Bureau came to Douglas with a request for a short-range interceptor with a high climb rate and a wing to be based on the delta form. At this point, the delta wing had never been flight tested.

At the same time, the Air Force was undertaking a similar project. Convair had been selected to design a rocket-propelled delta fighter, the XF-92. To expedite their studies of the new wing, Convair constructed a full-size jet-powered model of their planned fighter. Their approach was about as straight forward as one could get—a tube carrying the cockpit and engine with a triangular wing on each side and topped by a fin of similar shape. On June 8, 1948, it became the first airplane to fly with a delta wing.

Meanwhile, the Douglas fighter had evolved into a manta-like form with a low aspect ratio swept wing with rounded tips. All horizontal flying controls were mounted on the wing trailing edge, thus classifying the fighter as "tailless."

The results of the Douglas studies met with the Navy's approval and an order for two XF4D-1's was issued. The plane was to be built around a Westinghouse J40 engine with 7,000 lbs. thrust. However, the engine was still under development and the first two of the new Skyrays were completed before the powerplants were available. To expedite flight testing, a lower powered Allison J35-A-17 with only 5,000 lbs. was placed into the fuselage. Thus powered, the XF4D-1 was flown on January 23, 1951; and at the same time, the first of its problems developed. Because of insufficient power, the design characteristics of the new fighter could not be properly investigated.

With the arrival of the 7,000 lb. Westinghouse XJ40-WE-6, there was encouraging improvement in the Skyray's performance. But even this engine was con-



sidered temporary until the 11,600 afterburning XJ40-WE-8 would be available in mid-1953. Before the uprated Westinghouse was ready, though, the Navy decided to change the powerplant to the Pratt & Whitney J57-P-2 for the production Skyrays.

The decision to change the engines was to have a profound effect on both the performance of the Skyray and its production schedule. The larger size of the J57 required an almost total redesign of the airframe. To save time, the redesign was done while assembly was beginning on the first production planes.

Testing of the Skyray continued with the afterburning Westinghouse engine; and on October 3, 1953, the second prototype set a new world's speed record of 753.4 mph. This was the first time a carrier plane had ever held that honor. Thus, even though the Skyray was still considered underpowered, it foretold the great possibilities of the new fighter. In all, the Skyray was to establish seven official world records.

The J57-powered F4D-1 lifted off on its maiden flight on June 5, 1954, and startled even the pilot with its fantastic acceleration. On this first flight, the Skyray easily passed Mach 1. One more delay was encountered while the inlet duct was altered to correct an air flow deficiency, then the F4D-1 was ready for the Navy. Production was completed with the 420th F4D-1.

The Skyray had all the requirements of its interceptor role. It carried four 20 mm cannons in its wings, and hardpoints under the wings could carry four rocket canisters with a total of seventy-six 2.75 inch rockets. It could reach its operational altitude of 49,212 feet in two-and-a-half minutes and its maneuverability was considered outstand-

**Type:** single-seat carrier-based fighter-bomber  
**Maker:** Douglas Aircraft Co  
**Span:** 10.21 m (33 ft 6 in)  
**Length:** 13.79 m (45 ft 3 in)  
**Height:** 3.96 m (13 ft)  
**Wing area:** 51.75 m<sup>2</sup> (577 sq ft)  
**Weight:** maximum 11 340 kg (25 000 lb); empty 7268 kg (16 024 lb)  
**Powerplant:** one 6804-kg (15000-lb) with afterburning Pratt & Whitney J57-P-8 axial-flow turbojet  
**Performance:** maximum speed 1162 km/h (722 mph) at sea level; range 1931 km (1200 miles); service ceiling 16 765 m (55 000 ft)  
**Armament:** four wing-mounted 20-mm (0.79-in) cannon; six external pick-up points for up to 1814 kg (4000 lb) weapons, tanks or buddy packs  
**Crew:** 1  
**Production:** 419

ing. The Skyray was also found to be effective as a general-purpose fighter and could handle ground support duties too, if necessary.

The Skyray's wing spanned 33 feet 6 inches and had the greatest area yet seen on a Navy fighter—557 square feet, which accounts for some of its flashing performance. Overall length was 45 feet 8 inches, and the tip of the fin was 13 feet from the deck. Empty weight was 16,024 pounds; maximum takeoff weight was 27,000 pounds including 1,240 gallons of fuel, both internally and externally.

Maximum speed of the F4D-1 was 695 mph at 36,000 feet. The Pratt & Whitney J57-P-8B generated 10,500 lbs. of thrust with the afterburner. Service ceiling was 55,000 feet. Combat duration on intercept missions was 45 minutes.

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