

Model Number : SB2U

Model Name : Vindicator

Model Type: Scout, Bomber

The Vought SB2U series of scout/bombers was manufactured between 1936 and 1941 for both the United States Navy and the Marine Corps. When these aircraft were first introduced, they represented a major transition of naval aviation from the biplane to the modern low-wing monoplane. The Vought entry in the Navy Bureau of Aeronautics 1934 design competition featured a number of innovative ideas as well as a number of features carried over from the earlier biplane, SBU-1.



The other entries in the design competition included the Brewster XSBA-1, the Hall XPTBH-1, the Northrop XBT-1 and the Douglas XTBD-1. The Brewster, Northrop and Douglas designs were all-metal monoplanes, while the Hall design was a twin-engine, twin-float seaplane.

At the same time, the Navy also ordered prototypes of a number of biplane designs in case the monoplane projects failed to meet requirements. All of the biplane designs, except for the XSBC-3 Curtiss biplane, were rejected.

An order was placed for 54 SB2U-1 aircraft in October 1936. So while the monoplanes were being developed and introduced into service, biplanes continued to be produced.

To back up the XSB2U-1 design, Vought also developed a biplane entry, the XSB3U-1. The prototype XSB3U-1 was converted from the last production SBU-1. Except for the prototype's unique system of landing gear retraction, the XSB3U-1 failed to impress the Navy. The landing gear on the XSB3U-1 retracted backward into the fuselage lower center section and was covered by fairings which were bolted to the landing gear struts. This form of retractable landing gear stowage was far more streamlined than other designs of the time.



Of the monoplane competitors, the Navy accepted all but the Hall XPTBH-1 for fleet service. The Douglas XTBD-1 became the TBD-1. The Brewster XSBA-1, the only mid-wing monoplane submitted, went into production as the SBN-1. The Northrop XBT-1 had been entered in the competition as a combination dive bomber/scout aircraft and the Navy decided to develop the design as a dive bomber. It was designated as the Douglas SBD Dauntless and became the most widely used dive bomber of World War II.

The XSB2U-1 prototype was a single-engine, two-seat, low-wing, cantilever, and retractable landing gear monoplane that retained the metal and fabric covered fuselage of the earlier Vought aircraft. Most of the tail and wing surfaces were also fabric covered, the wing being almost completely fabric

except for a metal leading edge. The wing had a hydraulically operated trailing edge flap installed on the lower wing center section. Additionally, to assist in slowing the aircraft for carrier landings, the ailerons could be drooped to act as auxiliary flaps. It also had foldable wings to decrease space requirements when used aboard carriers. The prototype was powered by a 700-hp Pratt & Whitney R-1535-78 fourteen-cylinder, air-cooled radial engine driving a two-blade Hamilton Standard constant-speed propeller.



The aircraft flew for the first time on January 4, 1935 at Rentschler Field, Hartford, Connecticut. After a series of manufacturers' trials, the aircraft was delivered to the Navy at NAS Anacostia on July 2, 1936. During the Navy tests a



number of problems were uncovered. It had been intended to equip the aircraft with a reversible propeller to act as a dive brake; however, this proved to be difficult to use and became technically unsatisfactory. As a replacement, Vought constructed a dive flap that consisted of a number of finger-like spars mounted near the wing leading edge that, during normal flight, were flush with the wing surface but during a dive could be extended at right angles to the wing surface to slow the aircraft. These flaps failed to work satisfactorily because they caused so much drag that full engine power was needed to maintain control. Additionally, the flaps caused severe aileron

buffeting, and weighed some 140 pounds. As a result, the Navy decided to adopt a shallower dive angle and to extend the landing gear to act as a form of dive brake. The prototype was also modified to include additional bracing on the pilot's and observer's canopies.

SB2U:

Model Number : XSB2U-1

Model Name : Vindicator

Model Type: Scout, Bomber



Only one airplane was built for the Navy and the first flight was in 1936. This airplane had a retractable landing gear and was Vought's first monoplane.

Dimensions	
Wingspan	42.00 ft
Overall Length	33.98 ft
Height	9.79 ft
Weights and Capacities	
Empty Weight	4603 lb
Gross Weight	6253 lb
Useful Load	
Fuel Capacity	130 gal
Oil Capacity	
Powerplant Characteristics	
Type: P & W radial R-1535-78	
Rating	825 hp
Displacement	
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	231 mph
Landing Speed, Sea Level	
Stall Speed, Sea Level	65.50 mph
Initial Rate-of-Climb	1515 ft/min
Cruise Speed, Sea Level	
Range at Cruise Speed	1300 miles
Service Ceiling	27700 ft
Absolute Ceiling	
Crew: 2	
Armament: 1 forward firing ,30 caliber machine gun 1 flex .30 caliber machine gun in rear cockpit 4 - 100 pound bombs 1 - 500 pound bomb	

Model Number : SB2U-1

Model Name : Vindicator

Model Type: Scout, Bomber

The SB2U-1 was the first Vought operational monoplane design and it became the first low-wing monoplane used by the Navy to replace the conventional biplane designs used for carrier operations. With the exception of the wing leading edges and the engine cowl, which were metal covered, the SB2U-1 was of a fabric covered truss design. The SB2U-1's were used primarily for neutrality patrols prior to World War II and for Atlantic submarine and surveillance patrols early in the war. Most of the SB2U-1's were phased out of service by mid 1941. A few were used for stateside training until 1943.



The first deliveries to the fleet took place on December 13, 1937, when Bombing Squadron Three (VB-3) aboard the carrier USS Saratoga received their first SB2U-1 (BuNo 0727). The production SB2U-1 differed from the prototype. The aircraft had the 700-hp Pratt & Whitney engine replaced by a 825-hp Pratt & Whitney R-1535-96 radial and the cowling was changed to have a combined oil cooler/carburetor air intake installed high on the starboard side of the cowling. The exhaust was relocated from the underside of the cowling to a location somewhat higher and to the rear. The radio mast was repositioned from the fuselage spine between the cockpits to a position on the port side of the nose in front of the pilot's cockpit.

The SB2U-1 was armed with a forward-firing Browning .30-caliber machine gun mounted in the starboard wing outside the propeller arc and a second Browning .30-caliber machine gun in the rear cockpit on a flexible ring mount. The offensive bomb load consisted of a single 1,000-pound bomb carried on a fuselage centerline rack or two 500-pound bombs which were carried on racks mounted on the wing center section outboard of the landing gear. The centerline bomb could be replaced with a 50-gallon auxiliary fuel tank to extend the aircraft's range for the scouting role.

With the exception of some test and training aircraft, the production run of SB2U-1's was delivered to two squadrons, VB-3 and VB-2. A total of eighteen SB2U-1's were delivered to VB-3 aboard the USS Saratoga between December 13, 1937 and March 1, 1938. The squadron became the first Navy monoplane bomber squadron to operate on a carrier, and the second navy squadron to be equipped with a monoplane (the TBD-1 was the first monoplane to enter Navy service).

The SB2U-1 made its initial appearance aboard USS Lexington on March 2, 1938 when VB-2 received its first aircraft. By April 26, 1938, VB-2 had its full complement of 21 aircraft. The following month, Lexington's Air Group Commander took delivery of a specially painted SB2U-1 (BuNo 0774) to complete the carrier's complement of dive bombers.



Dimensions	
Wingspan	42.00 ft
Overall Length	33.92 ft
Height	9.79 ft
Weights and Capacities	
Empty Weight	4603 lb
Gross Weight	6253 lb
Useful Load	
Fuel Capacity	130 gal
Oil Capacity	10 gal
Powerplant Characteristics	
Type: P & W R-1535-96 air-cooled radial	
Rating	750 hp
Displacement	1830 in ³
Weight	6253 lb
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	231 mph
Landing Speed, Sea Level	
Stall Speed, Sea Level	65.50 mph
Initial Rate-of-Climb	1515 ft/min
Cruise Speed, Sea Level	
Range at Cruise Speed	775 miles
Service Ceiling	27500 ft
Absolute Ceiling	
Crew: 2	
Armament: 1 forward firing .30 caliber machine gun 1 flex .30 caliber machine gun in rear cockpit Provisions for four 100 lb. bombs or one 500 lb. bomb	

Model Number : XSB2U-3, SB2U-3

Model Name : Vindicator

Model Type: Scout, Bomber

The SB2U-3 was an upgraded SB2U-2 designed to meet a U. S. Marine Corps requirement for a dive-bomber with a longer range than the BG-1's then in service. To meet this requirement for a long-range capability, Vought offered the Marine Corps a new variant of the SB2U with increased fuel capacity. On September 25, 1939, the proposal was accepted and Vought received a contract for 57 aircraft under the designation SB2U3.



The XSB2U-3 prototype started out as a standard production SB2U-1 and was converted to the proposed SB2U-3 configuration. The changes included: an increase in the span of the horizontal stabilizers from 13 feet 4 inches to 15 feet 2 1/16 inches, a substantially increased internal fuel supply, provisions for four forward-firing .50-caliber machine guns, and a .50-caliber machine gun for the observer. The engine was changed from the 825-horsepower Pratt & Whitney R-1535-96 to the 825-horsepower Pratt & Whitney R-1535-02. These changes resulted in an increase of some 921 pounds in the aircraft's empty weight. The improvements made to the basic airplane did little or nothing to improve its performance; therefore the increased weight of fuel caused the SB2U-3's performance to suffer.

The increased fuel capacity was achieved by increasing the main fuel tank capacity and adding three additional tanks to the wing center section. These tanks were unprotected and would later prove to be a major problem in combat. The increased tankage plus a 50-gallon external auxiliary centerline tank gave the SB2U-3 a range of 2,640 miles (or a search radius of 1,320 miles) for a search and scout mission. When armed with a



1,000-pound bomb load the SB2U-3 had a combat radius of 560 miles for a dive bomb mission.



The XSB2U-3 was flown for the first time during February 1939. After a brief period of testing, the aircraft was returned to the Vought factory where it was fitted with a pair of Edo floats. It was returned to NAS Anacostia, Washington, D.C. to resume testing during April. Difficulties in water handling led to the aircraft being modified with a large ventral fin and larger water rudders on the floats. As a result, the Navy decided that there was only limited value in a float scout aircraft and the production contract for the SB2U-3 specified that all 57 aircraft be produced

as landplanes with retractable landing gear. It is a little known fact that the first production SB2U-3 was actually delivered as a float aircraft then reconfigured as a land plane before formal acceptance by the Marines.

It was during the production run of the SB2U-3 that the Navy decided to give the aircraft a name and bestowed the name "Vindicator" to the entire SB2U series. Deliveries of SB2U-3's began on March 14, 1941 when VMS-2, based at NAS North Island, San Diego, California, received their first aircraft

(BuNo 2045). A total of 27 SB2U-3's were delivered to VMS-2 between March 14 and April 30, 1940. VMS-2 was followed by VMS-1 at MCAS Quantico, Virginia, on May 9. Like its sister squadron, VMS-1 received a total of 27 aircraft with the last being delivered during July of 1941.

Marine SB2U-3's stationed at Midway took part in the Battle of Midway. On the second day, Capt. Richard E. Fleming, after being hit by the Zero's protecting the Japanese fleet, dived his burning plane at the Japanese cruiser Mogami. For his actions, he was posthumously awarded the Congressional Medal of Honor, the first Marine pilot to receive this award.

	Seaplane XSB2U-3	Landplane SB2U-3
Dimensions		
Wingspan	42.00 ft	42.00 ft
Overall Length	34.00 ft	34.00 ft
Height	10.25 ft	10.25 ft
Weights and Capacities		
Empty Weight	5634 lb	5634 lb
Gross Weight	9421 lb	9421 lb
Useful Load		
Fuel Capacity	130 gal	130 gal
Oil Capacity	12 gal	12 gal
Powerplant Characteristics		
Type: P & W R-1535-46 (XSB2U-3) P & W R-1535-02 (SB2U-3)		
Rating	750 hp	835 hp
Displacement	1830 in ³	1535 in ³
Weight	1460 lb	635 lb
Size (length X diameter)		
Performance		
Maximum Speed, Sea Level	243 mph	243 mph
Landing Speed, Sea Level		
Stall Speed, Sea Level		
Initial Rate-of-Climb	1070 ft/min	1070 ft/min
Climb in 10 minutes		
Range at Cruise Speed	1320 miles	1320 miles
Service Ceiling	23600 ft	23600 ft
Absolute Ceiling		
Crew: 2		
Armament: XSB2U-3 1 fixed forward firing .30 caliber machine gun		

1 flex .30 caliber machine gun in rear cockpit
Provisions for bomb racks in lower fuselage and wings

Armament: SB2U-3
Provisions for 4 forward firing .50 caliber machine guns
(usually only one or two were installed)
Provisions for four 100 lb. bombs or one 500 lb bomb
1 flex .50 caliber machine gun in rear cockpit

Model Number : V-156-F

Model Name :

Model Type: Scout, Bomber

The threat of war in Europe led Vought to outfit an extra SB2U-2 airframe as a company demonstrator to seek export sales for the SB2U series in Europe. The aircraft was sent to Paris in October of 1938 where it was demonstrated for French officials. This demonstration led the French government, on February 22, 1939, to place a contract for 20 aircraft under the company designation V-156-F.



While based on the earlier SB2U-2, the V-156-F featured a number of changes to meet the needs of the French Navy. The throttle was reversed so that it operated in the opposite way from U.S. standards (full power in the rearmost position) and metric instrumentation replaced U.S. instruments. French radio equipment was installed in place of American radios and French Darne 7.5-mm machine guns replaced the U.S. .30-caliber machine-guns. The French were not allowed to use the Vought bomb displacement gear (for security reasons) and it was deleted with the understanding that French Alkan equipment would be installed after the aircraft were delivered. By May of 1940 this equipment had still not been installed so most French V-156-F combat missions were carried out using only the underwing bomb racks. One other feature of the V-156-F was that wing-mounted fence-type dive brakes (rejected by the U.S. Navy) were installed on the V-156-F.

During May of 1939, an additional order for 20 V-156-F's was received by the Vought Company, and in June the first V156F rolled off the Vought assembly line. The first V-156-F's arrived at LeHavre during July. They were off-loaded and transported to Orly Field in Paris for assembly and checkout. The first flight took place on August 6, and by the time hostilities began with Germany on September 3 there were thirty-four V-156-F's in the inventory. Once the war broke out, the remaining V-156-F's purchased by the French were shipped via Canada to avoid being embargoed under the U.S. Neutrality Act.



Escadrille AB1 on the carrier Bearn was the first French unit to fly the V-156-F's. When the carrier was declared obsolete for war service, her squadrons were moved ashore. They were split into the first Flotille de Chasse (F1C), equipped with fighters and the first Flotille d'Attaque (F1A)

consisting of AB1 and AB3, both flying the V-156-F. These units flew alongside AB2 and AB4, which flew Loire-Nieuport LN 401/411 dive-bombers.



After AB1 received its full complement of 11 V-156-F's it was deployed to Lanveoc-Poulmic to complete transition training. On reaching operational status, AB1 was moved to Alprecht, near Boulogne, on the Channel coast. From there, during November 1939, the squadron performed maritime patrols, and flew protection for allied convoys operating in the English Channel and the North Sea. The second French unit, AB3, was formed at Cherbourg on December 1, 1939.

The V-156-F received its "baptism of fire" on May 20, 1940 when AB1 was ordered to bomb a number of vital bridges that crossed a canal near Origny-Ste-Benoite on the Oise River. This attack was made in an attempt to slow down German armored units, even though the Navy pilots had no training or experience in attacking land targets. During this attack, the squadron was caught by a flight of Messerschmitt Bf-109E's and lost five aircraft.

The surviving V-156-F's of AB1 participated in covering the Dunkirk evacuation that enabled some 338,226 British and Allied soldiers to reach the safety of England. From May 26 to June 4, AB1 attacked German armor and artillery with their remaining six V-156-F's, with a loss of one aircraft. By the time France fell, the V-156-F had proven it could carry the fight to the enemy. While not a world-class dive bomber, it managed to get by mainly on the wits and courage of the men in the cockpit. AB3 was based at Cuers in the south of France and was attacking Italian targets during the waning days of the French war against the Axis powers. AB3 hit several targets in Northern Italy on June 14, 1940 when the squadron took off in two groups looking for targets of opportunity. The first group sighted an Italian submarine on the surface some twenty miles off Albenga. The four V-156-F's made a perfect bomb run and scored two hits, sinking the submarine.



The next day six V-156-F's were lost when Italian Fiat CR-42 biplane fighters attacked their base. On June 17 the surviving aircraft attacked Porto San Stefano Liguria. This was their last operational mission. After this mission the squadron was evacuated to Corsica and by August 30, 1940, the V-156-F's were history.

Dimensions	
Wingspan	42.00 ft
Overall Length	33.92 ft
Height	9.79 ft
Weights and Capacities	
Empty Weight	4550 lb
Gross Weight	6500 lb
Useful Load	

Fuel Capacity	130 gal
Oil Capacity	10 gal
Powerplant Characteristics	
Type: P & W R-1535-02	
Rating	825 hp
Displacement	1535 in ³
Weight	635 lb
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	233 mph
Landing Speed, Sea Level	
Stall Speed, Sea Level	64.70 mph
Initial Rate-of-Climb	1720 ft/min
Cruise Speed, Sea Level	
Range at Cruise Speed	726 miles
Service Ceiling	28200 ft
Absolute Ceiling	
Crew: 2	
Armament: 2 forward firing .50 caliber machine guns 1 flex .50 caliber machine gun in rear cockpit Provisions for bomb racks on fuselage and wings	

Model Number : V-156-B1
Model Name : Chesapeake
Model Type: Scout, Bomber

On March 28, 1940, the French government placed an order for an additional 50 V-156-F's, with deliveries to begin during early 1941. Due to the production of the SB2U-3 for the Marine Corps, it became necessary for Vought to sub-contract many of the V-156-F subassemblies. As a result of this delay, the second production batch of V-156-F's was not ready for delivery before France fell, and the contract was taken over by



the British, with the V-156-F's being re-designated as the V156-B1.

To meet British requirements the throttle arrangement was returned to the original design (forward to increase power). The Vought bomb displacement gear was reinstalled. The larger fuel tanks of the SB2U-3 were incorporated and armor protection for the crew and fuel tanks was provided. Also, the forward-firing armament was increased to four wing mounted .30-caliber machine guns instead of the single gun used on the SB2U-2. The fence-type wing dive brakes were deleted. Installation of a British tail hook was considered, but this is not known to have actually occurred. It is believed all V-156-B1's retained the U.S. Navy tail hook.

The aircraft was given the name "Chesapeake" in British service and were assigned the serial numbers AL908 to AL957. The first Chesapeake flew on February 26, 1941, and by the end of March, the British had accepted the V-156-B1. In spite of the aircraft's overall poor performance in areas vital to carrier operations, some British officials considered using the aircraft as a defensive weapon for seaborne operations from escort carriers. Tests soon revealed that the added weight of fuel, armor and armament made the takeoff run (some 1,700 feet) far too long for carrier operations from British aircraft carriers. Despite this, shipments of the new aircraft to England began during the summer of 1941.



The first aircraft to arrive at Liverpool were trucked to the aircraft repair depot at Burtonwood. After re-assembly and testing, the aircraft were assigned to various Fleet Air Arm squadrons. The first unit to receive the Chesapeake was Squadron No. 778, which conducted tests with the aircraft beginning in June of 1941. The unit was stationed at RNAS Arbroath and operated as a Service Trials Unit, with one or two assigned aircraft for short periods of time until December 1941.

Late in June, Squadron No. 786 received a few V156B1's for test and evaluation during July.

Squadron No. 811 based at RNAS Lee-on-Solent was the only squadron to receive enough Chesapeakes for operational service. The Squadron received a total of 14 aircraft during July of 1941. The aircraft remained on duty for only five months, being replaced by Fairey Swordfish aircraft in November.



As the war progressed, Squadron No. 771 at Twatt, Squadron No. 770 at Crail, Squadron No. 772 at Machrisanish, and Squadron No. 776 at Speke all used a number of Chesapeakes for target-towing duties. During June of 1942, Squadron No. 784 was formed and this unit used a few V156B1's for night-fighter training. Squadron No. 77 was based at Lee-on-Solent until October of 1942, then moved on to Drem. By August of 1943, the Squadron had retired all of the V156B1's. By May of 1944, the last Chesapeake was withdrawn from Fleet Air Arm (FAA) service when Squadron No. 770 retired their last target-towing aircraft.

Model Number : XSO2U-1 (V-167)

Model Name : Kingfisher

Model Type: Scout, Observation

One XSO2U-1 was built to meet a Navy request for a two-seat high-speed scout. The XSO2U-1 used many of the features of the OS2U-1. It was larger and used a Ranger XV-770-4 twelve-cylinder inverted inline engine specified by the Navy. The competition was won by the Curtiss XSO3C-1.



Dimensions	
Wingspan	38.17 ft
Overall Length	34.17 ft
Height	15.01 ft
Weights and Capacities	
Empty Weight	
Gross Weight	
Useful Load	
Fuel Capacity	
Oil Capacity	
Powerplant Characteristics	
Type: P & W radial R-1535-78	
Rating	520 hp
Displacement	
Weight	
Size (length X diameter)	
Performance	
Maximum Speed, Sea Level	201 mph
Landing Speed, Sea Level	
Stall Speed, Sea Level	
Initial Rate-of-Climb	
Cruise Speed, Sea Level	
Range at Cruise Speed	
Service Ceiling	
Absolute Ceiling	

Crew: 2
Armament: