

SB2C

Helldiver

in action



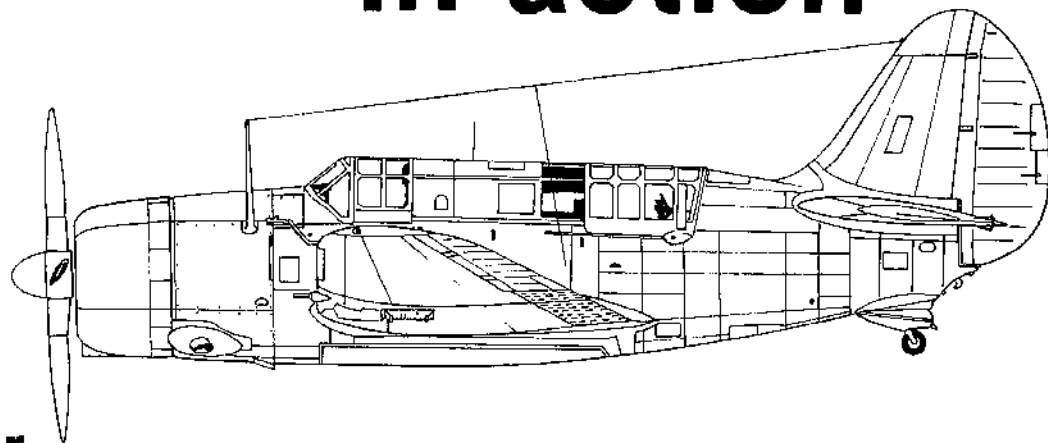
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Aircraft No. 54

SB2C

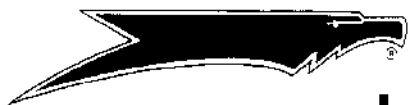
Helldiver

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by Robert Stern

illustrated by Don Greer



squadron/signal publications inc.

Aircraft No. 54

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Acknowledgements

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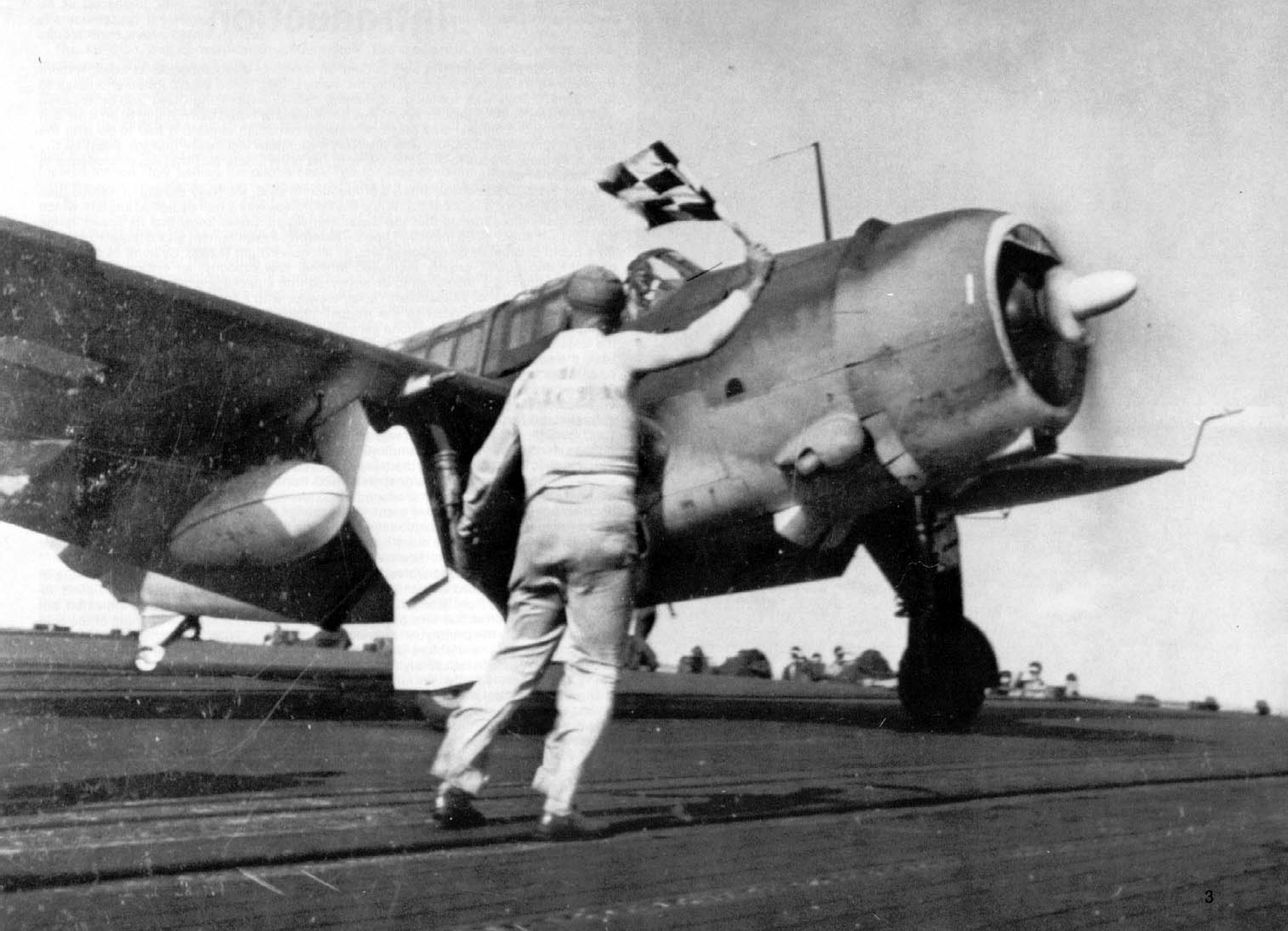
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(Facing Page) With a wave of his flag, the launch officer gives the go for VB-7's CO to launch from Hancock. This SB2C-3E has a drop tank in the place of the normal APS-4 pod under its right wing. At the far left a crewman lowers the chalkboard which carried last-minute weather or target information. This is the last of the Luzon raids, 25 November 1944. Hancock's air group carried a Yellow spinner and cowl trim at this time. (USN/NARS)



One of the first Helldiver squadrons to deploy with the fleet, VB-15 off Essex, had arrived in time for the Marcus Raids, 20 May 1944. This SB2C-1C returns home post-raid, the afternoon sun reflecting off the sea.



Introduction

The Curtiss SB2C Helldiver was, at best, an adequate divebomber. At its worst, it more than earned its numerous derogatory nicknames: 'Big Tailed Beast' (often shortened to just 'Beast'...there was no risk of confusion), 'Son-of-a-Bitch 2nd Class' and others even less delicate. Yet the reasons why it was so universally hated had nothing to do with Curtiss' or Project Engineer Ray Blaylock's ability to design aircraft. It had to do with the Navy's original specification, with the Navy's stubborn insistence that the Beast be the first truly mass-produced aircraft, and with the unfortunate fact that a war happened in the middle of all this.

When the SBD Dauntless entered production in 1938, the Navy Bureau of Aeronautics began the hunt for its successor. While the Dauntless was a well-designed aircraft, which earned many more friends than the Beast ever would, BuAer knew that its speed, range and payload could all be improved upon. Therefore, a requirement was circulated, calling for a Scout-Bomber to be designed around the new Wright R-2600 Cyclone 14 of 1500hp normal rated power, greatly increased internal fuel capacity, an enclosed bomb-bay capable of holding a 1000lb, all to be squeezed into a package small enough that two of them could fit on a 40'x48' aircraft carrier elevator with a foot to spare all around.

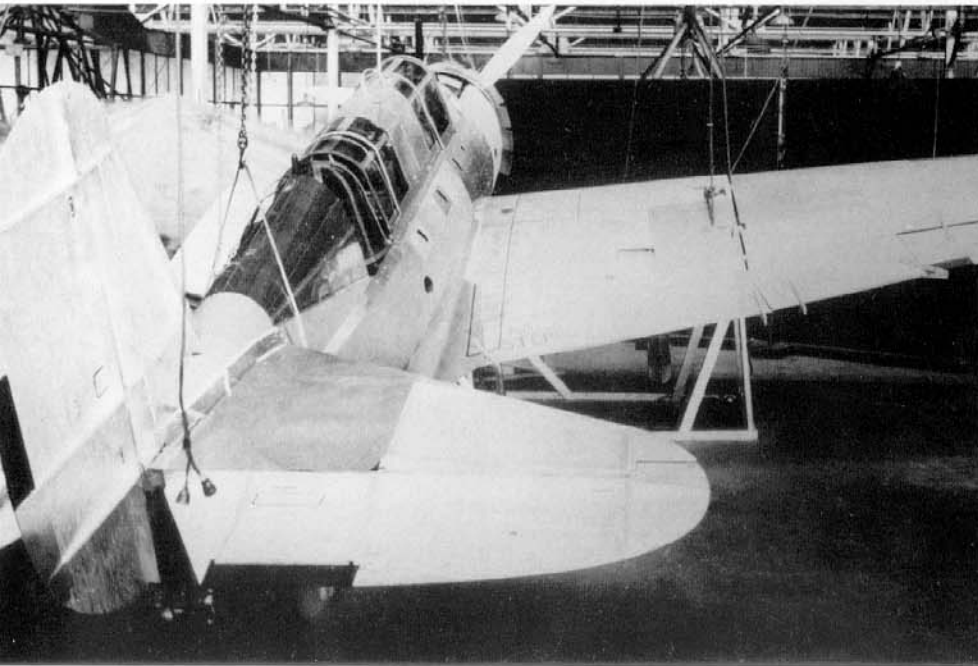
Six companies responded to the August 1938 Request for Proposals, Curtiss with Design 84. While the specifications generally called for 'state-of-the-art' advances, it was the last requirement, that of fitting two of the new Scout-Bombers on an elevator, that was to be the source of the Helldiver's problems. The normal solution to the need for increased internal capacity is to make a bigger aircraft, but this was the one area in which Blaylock was most severely restricted. The only other alternative was to make the new aircraft extremely broad for its length, with increased tail area to make up for its lack of natural stability. It looked like what it was, the smallest skin around the largest package. This, more than any other factor, was to be the cause of the Beast's unsavory reputation.

Because Curtiss-Wright's manufacturing capacity was already overloaded with Hawk 75A and P-40 contracts, when the Navy approved the preliminary designs and ordered a single prototype under the designation XSB2C-1 on 15 May 1939, plans were immediately made for the new bird to be produced at a new factory to be built at Columbus, OH. Pending completion of the new plant, detail design and component manufacture for the prototype began in a cattle barn on the Ohio State Fairgrounds. The only alteration BuAer made to the Curtiss full-size mock-up of Design 84 was the deletion of the fully-enclosed power turret. (Brewster also received a contract for a single prototype, the XSB2A-1).

Warning signals sounded almost immediately. In February 1940, wind tunnel tests of XSB2C models indicated excessive stall speeds. The wing was hurriedly redesigned, increasing gross area from 385 to 422 sq. ft. Excessive dive speeds were also indicated, but no action was taken at this time beyond making provision for variable opening of the split flap/dive brake on the prototype for evaluation purposes. With these changes, major prototype component manufacture was completed in the cow barn and the sections shipped to Buffalo, NY, for final assembly. The completed prototype of the XSB2C-1 was rolled out on 13 December 1940. Totally untested, and with lingering doubts about its handling characteristics, the Helldiver had nevertheless received a contract for 370 examples almost three weeks *before* roll-out.

An example of the Beast's design antecedent, the SBC-4 Helldiver, in the prewar markings of VF-6 off Enterprise, June 1940; overall Aluminum paint with a True Blue tail, Chrome Yellow upper wing upper surface, Insignia Red cowl, wing chevron and fuselage stripe, White trim and numeral. This example served as personal transport for the air group's CO. (NASM)

The XSB2C-1 mock-up already showed the chunky shape and big tail that so characterized the Helldiver. A feature of the early design stages, which appears here but didn't survive much longer, was the fully enclosed turret for the rear gunner, 16 June 1939. (C-W)



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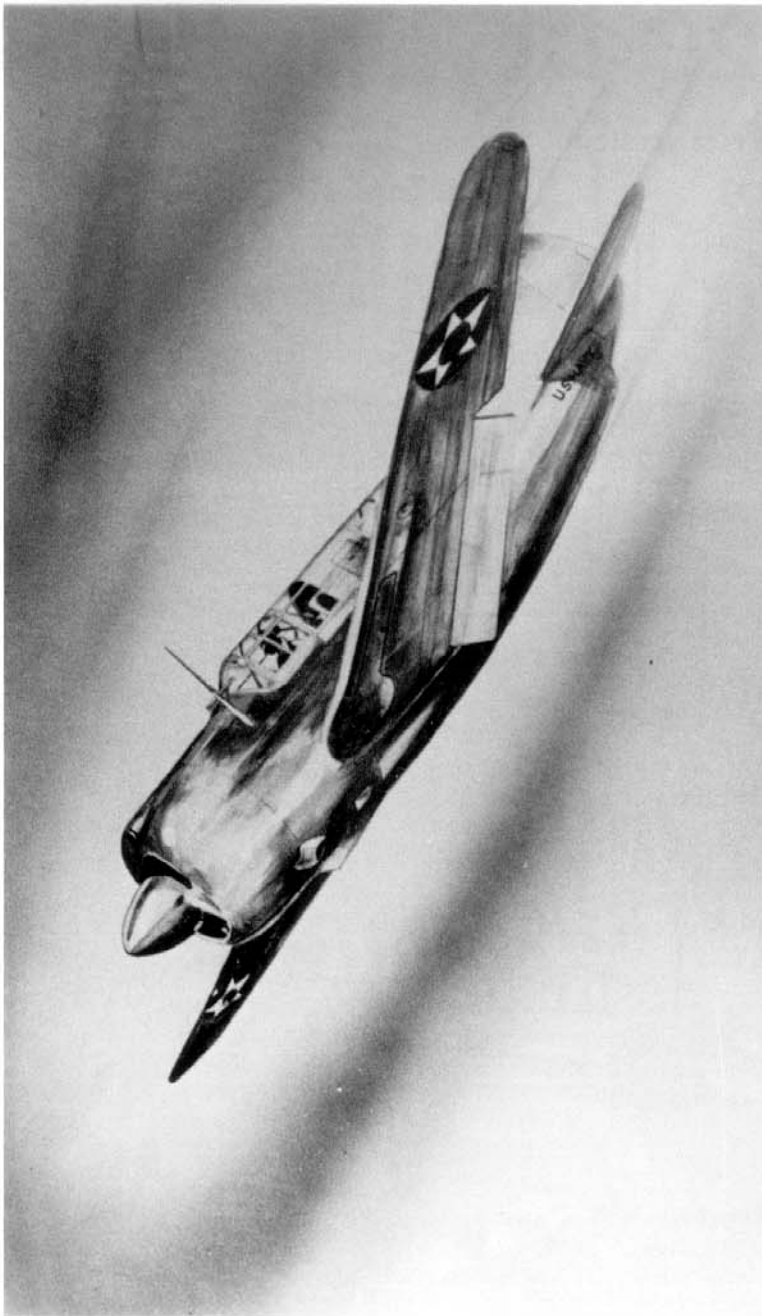
The XSB2C-1 was conventionally constructed. The oval-section fuselage was semi-monocoque, with aluminum alloy frames skinned with flush-riveted alclad sheet. The two-spar aluminum alloy wing structure was built in four sections, the inner two were bolted to the fuselage and the outer sections folded upward just outboard of the inward-retracting landing gear. Balanced ailerons made up the outer wing section's trailing edge along with the split flap/dive brake, which extended inboard of the wing fold. The leading edge slats, mechanically actuated by landing gear extension, helped give low-speed lift. A 105gal. fuel tank was housed in each inner wing section and a fuselage tank of 110gal. was located immediately behind the pilot's seat. The tail was aluminum-framed and skinned with the moving surfaces being fabric-covered. The tail wheel retracted upward.

The weapons bay had hydraulically-operated doors and was designed to accommodate a standard load of a single 1000LB bomb or a pair of 500LB bombs, but with minor modification it could carry a 1600LB bomb or a Mk XIII torpedo. Forward firing armament of the prototype included two .50CAL Browning mgs in the cowlings, plus two more mounted in the wings just outboard of the landing gear. A pair of rear firing .30CAL Brownings were provided for the observer/radio operator in a ring mount identical to that fitted in the SBD.

Power was provided by the troublesome new Cyclone with a normal rating of 1500HP at 5800FT and a military rating of 1700HP at 3000FT. The Helldiver was driven by an equally new and troublesome Curtiss-Electric three-bladed prop. Both prop and powerplant would eventually prove reliable but, in the beginning, they would just add unnecessarily to the Beast's problems.

The prototype flew for the first time on 18 December 1940, five days after roll-out, with Lloyd Childs at the controls. From that first flight, the continuing stability problems claimed the designer's attention. The low speed characteristics of the Beast, as predicted by the wind tunnel tests, were questionable at best and early flight testing revealed additional instability at speed in the yaw axis, with only marginal stability in pitch. On 9 February, after less than a month of testing, the Cyclone quit on final approach and the prototype fell short of the runway, breaking its back just aft of the wing attachment point. The pilot walked away from the crash, but the Helldiver program was without a flight test airframe for three months. Flying again on 6 May, it was down again within the week. On the 10th flight of the new series, the left landing gear collapsed, fortunately the damage was minor this time and the prototype was flying again before the end of the month.

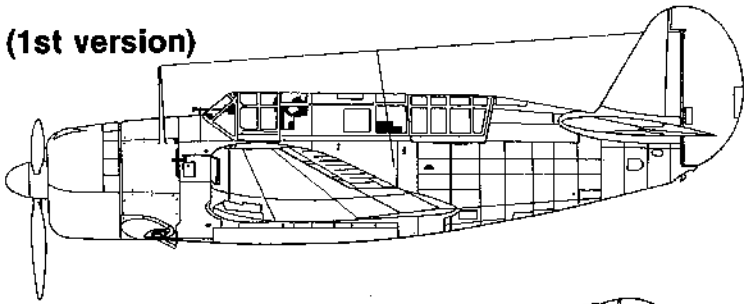
Enough data had been gathered on the Beast's handling characteristics by August that the prototype was taken in hand for modification. In an effort to improve handling, the engine mounts were lengthened by a foot and the forward fuselage was stretched by the same dimension. At the same time other changes were made, including lengthening the bomb-bay, extending the cowl flaps completely around the engine, fitting propeller cuffs to aid cooling and adding a chin scoop for the oil cooler. In this condition, the prototype made a few flights in September, then was retired again for further modifications. When it again appeared on 20 October, it sported an enlarged tail in a further attempt to alleviate the longitudinal instability. Testing resumed immediately with dive and spin tests. These flights continued for two months until, on 21 December 1941, with Baron T. Hulse at the controls, the prototype was put into a 'clean', terminal-velocity dive from 22,000ft. with a high-G pull-out at the end. During that recovery, the right wing and tail failed simultaneously and the sole prototype spun into the ground. Fortunately, Hulse was able to bail out, but the only Helldiver was irreparably damaged and for five months the program would have to proceed without a flying testbed.



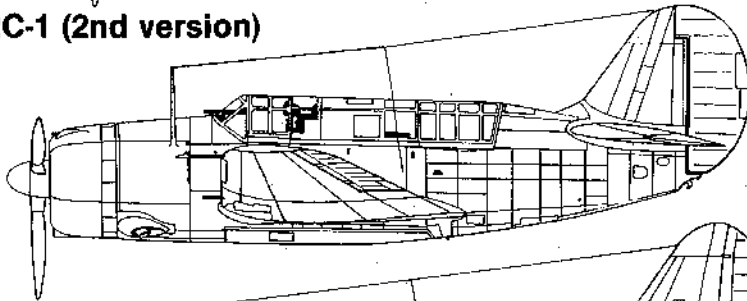
An artist's conception of the XSB2C-1 as of 16 August 1940. By this time, the design was fixed and the prototype already under construction, making for an accurate representation. (C-W)

SB2C Development

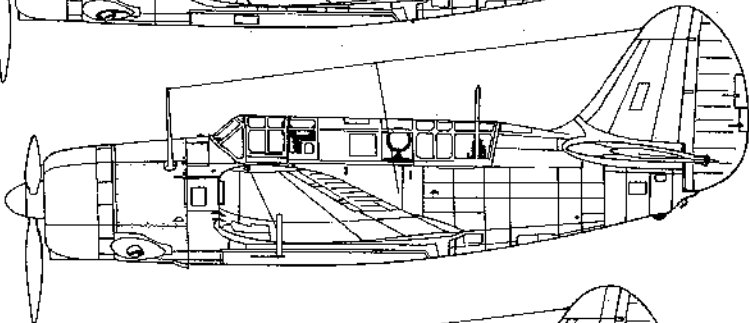
XSB2C-1 (1st version)



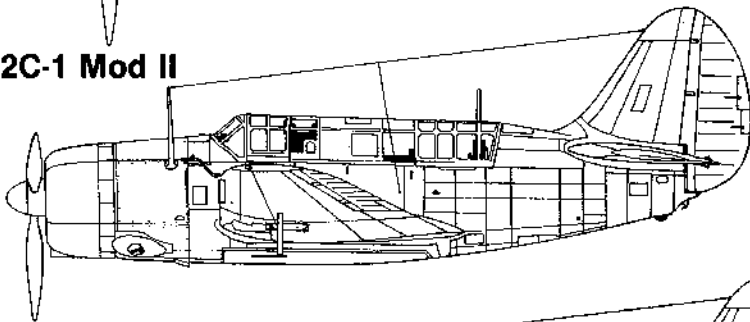
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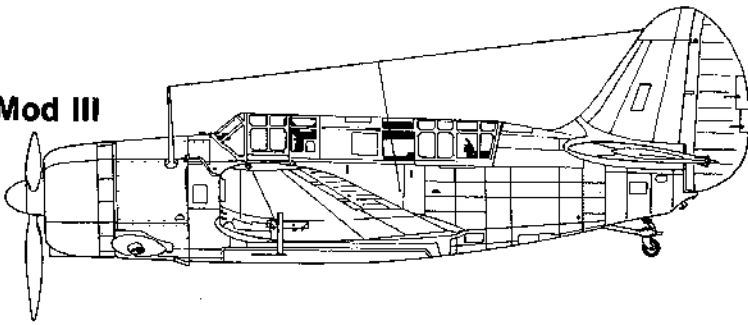
SB2C-1



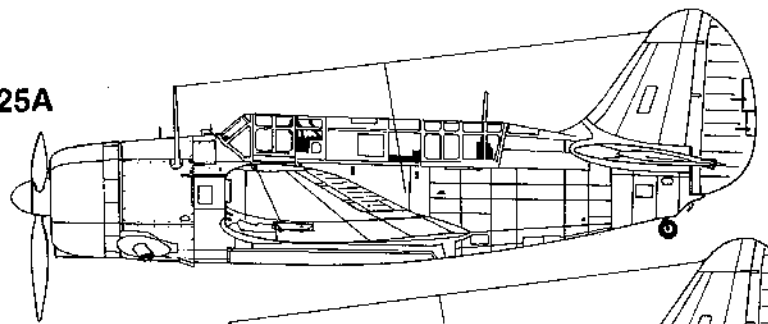
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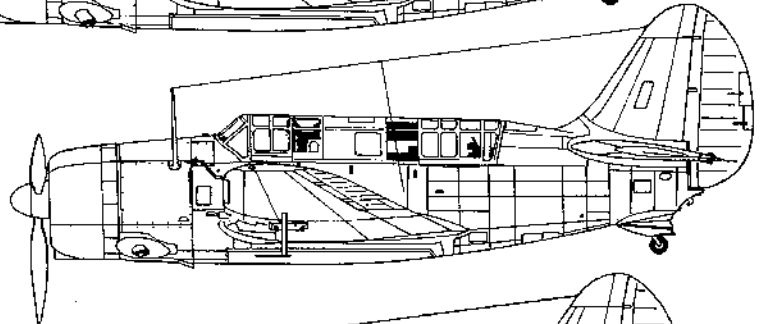
SB2C-1 Mod III



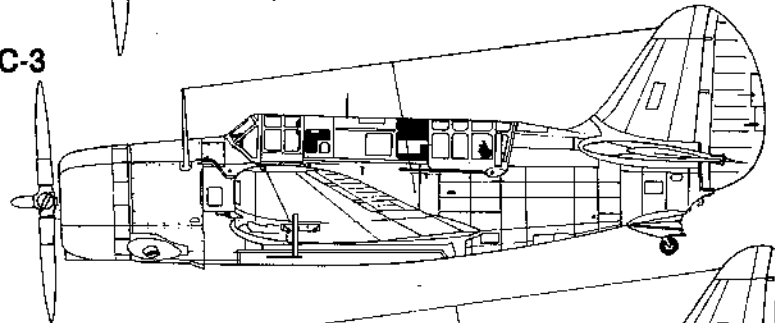
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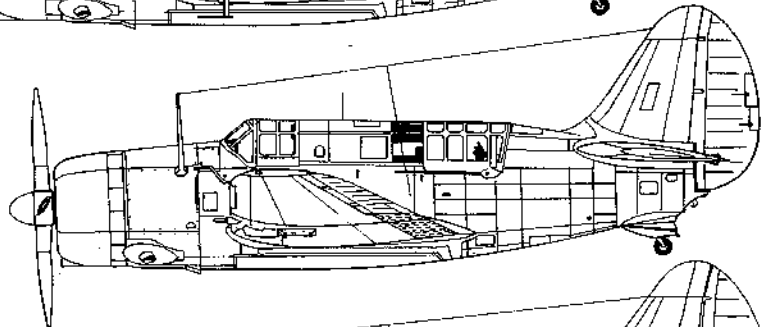
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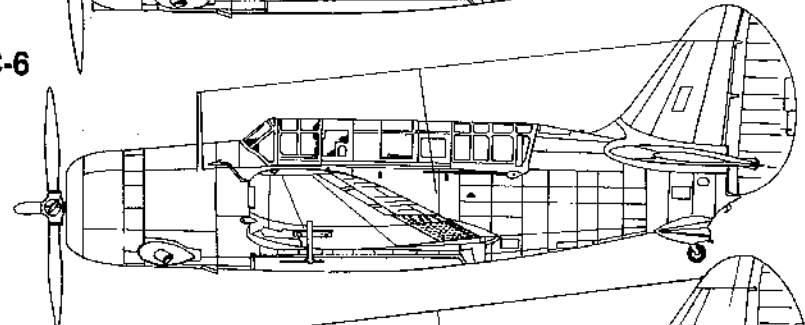
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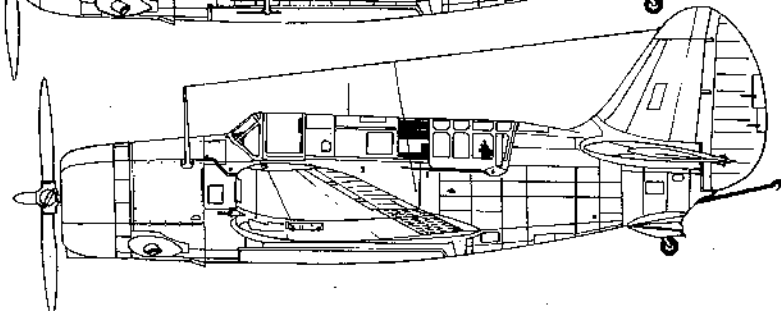
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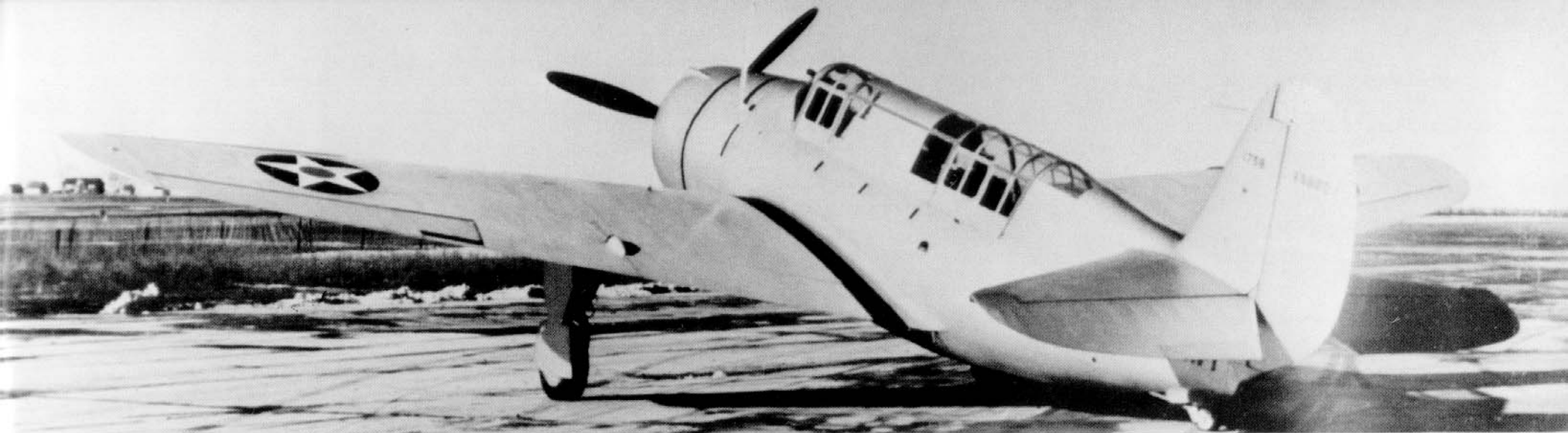


XSB2C-6



SB2C-5E

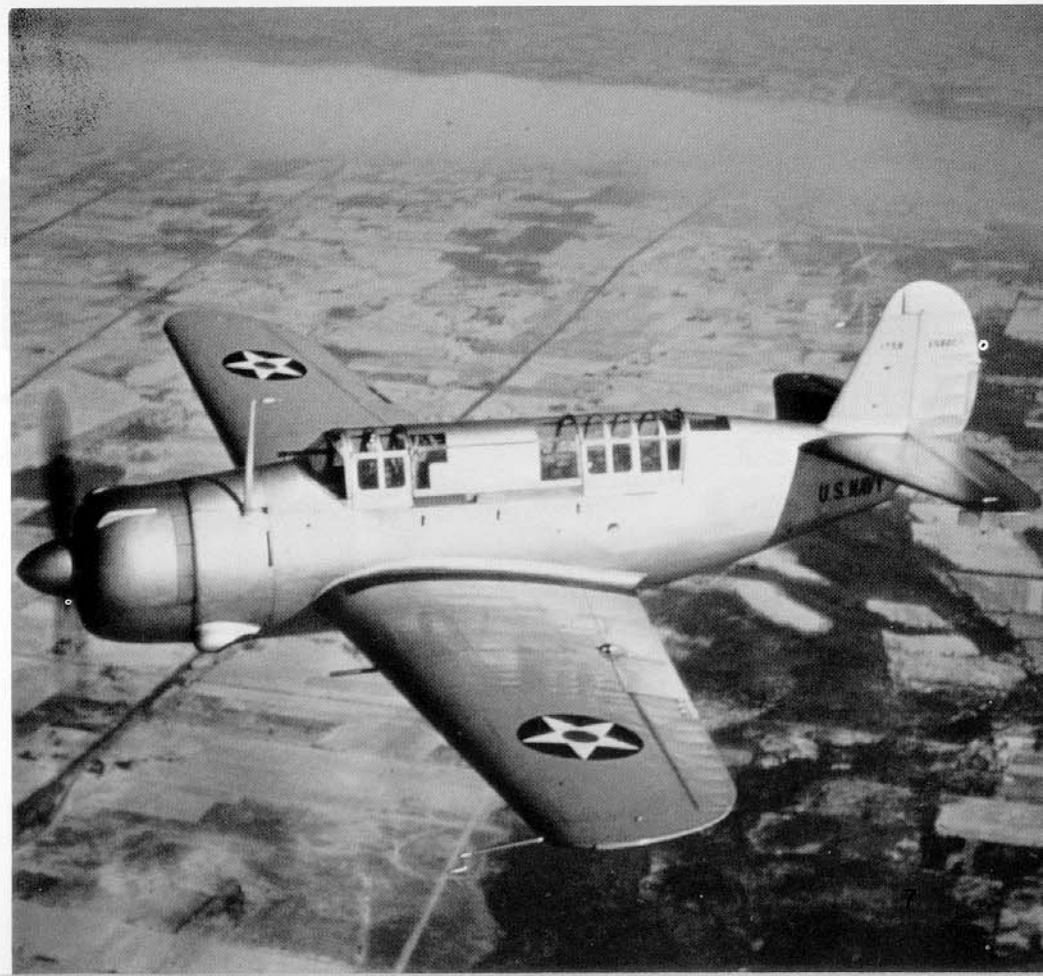


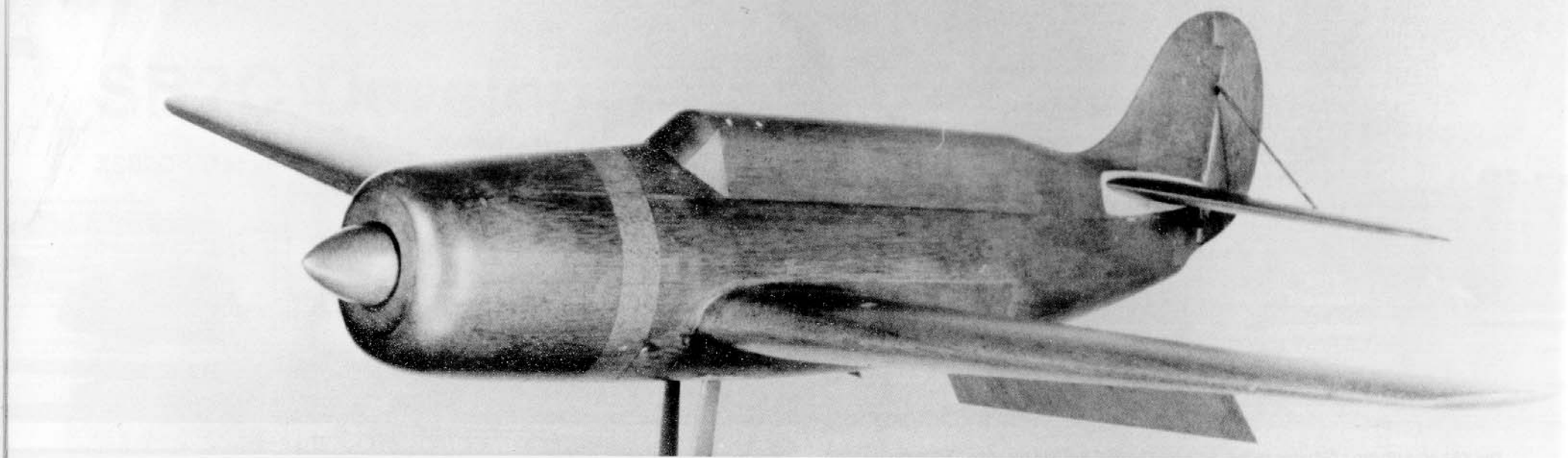


The XSB2C-1 (BuNo 1758) was rolled out from Curtiss' Buffalo plant on 13 December 1940. (C-W)

(Right) The first flight came five days later on 18 December. The color scheme was overall Aluminum paint with Chrome Yellow wing upper surfaces and Black wingwalks, flap undersides and horizontal tail. (C-W)

The prototype, in its original configuration, is seen soon after roll-out. (C-W)

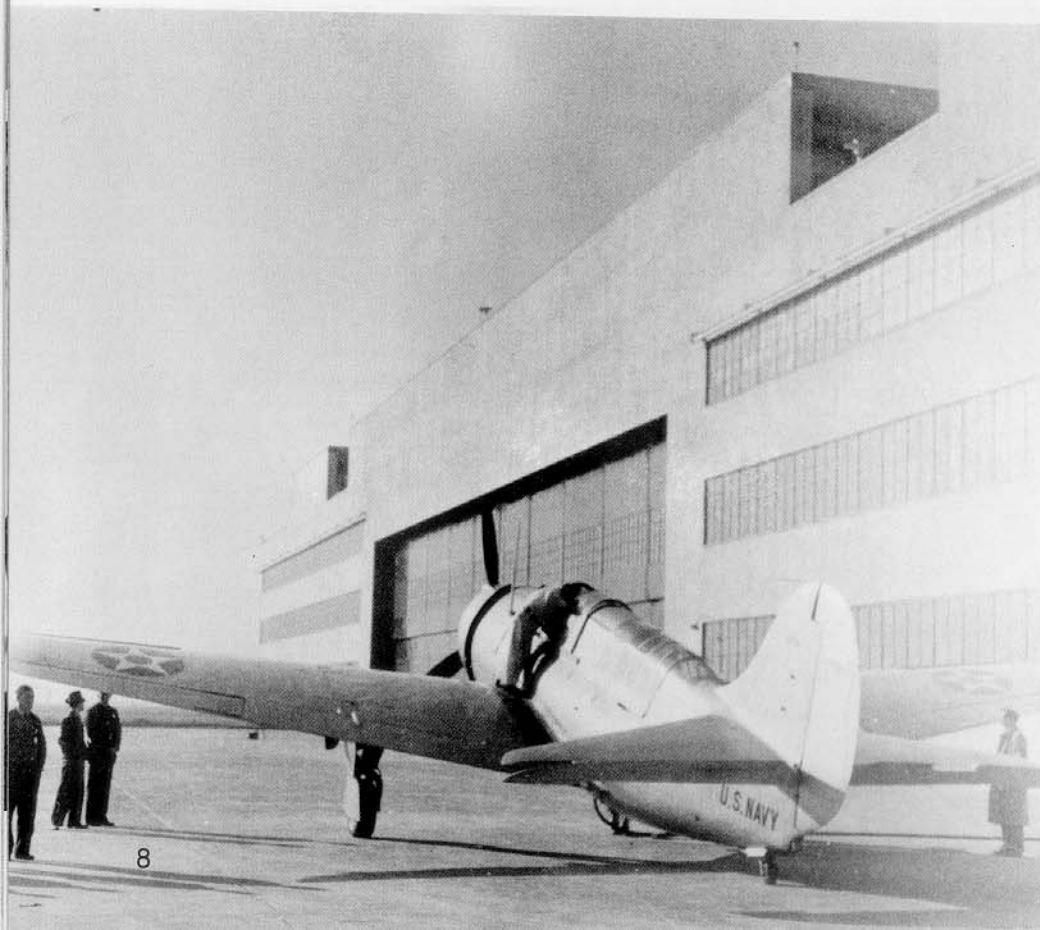


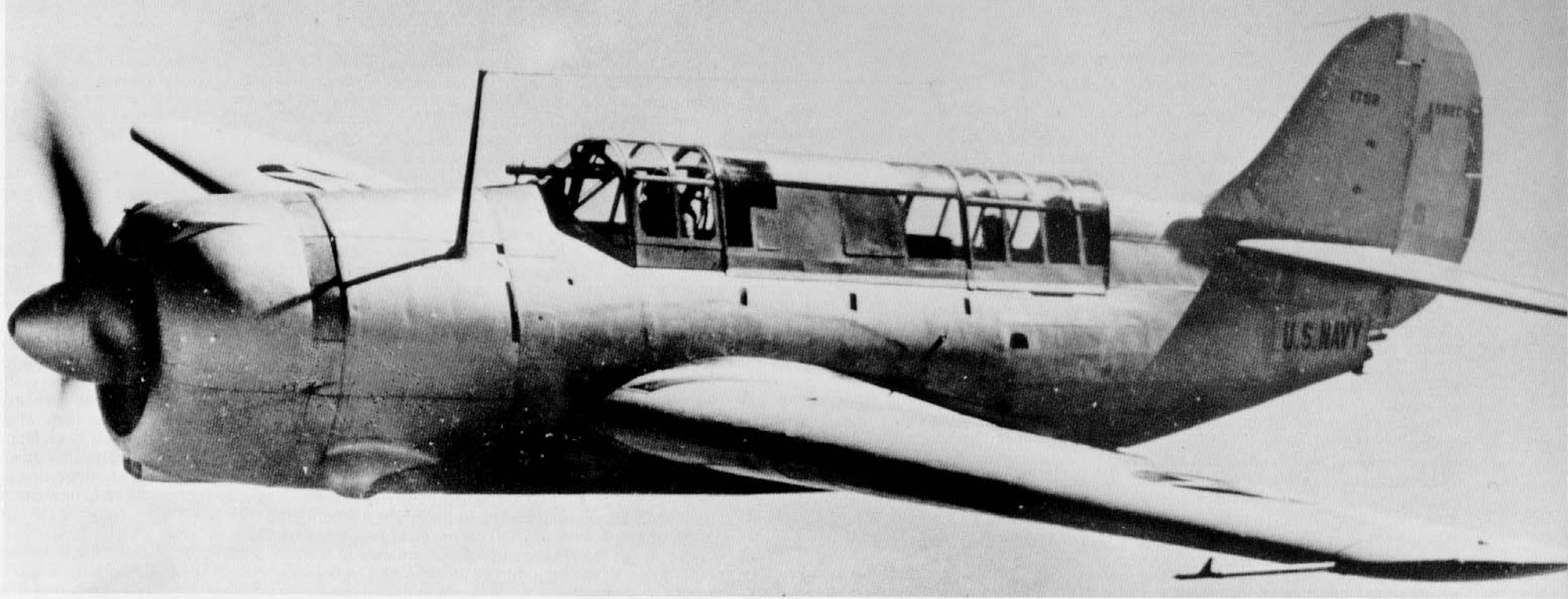


As early as February 1940, wind tunnel tests showed the XSB2C-1 to be unstable in the long axis. Initial flight tests proved the prediction. This wind tunnel model shows the two alterations suggested by Curtiss as a solution; the extended nose (note the plug of lighter-colored wood) and the enlarged tail. (C-W)

(Left) The revised XSB2C-1 flew for just two months in this final configuration. It is seen at Buffalo on 12 November 1941. (C-W)

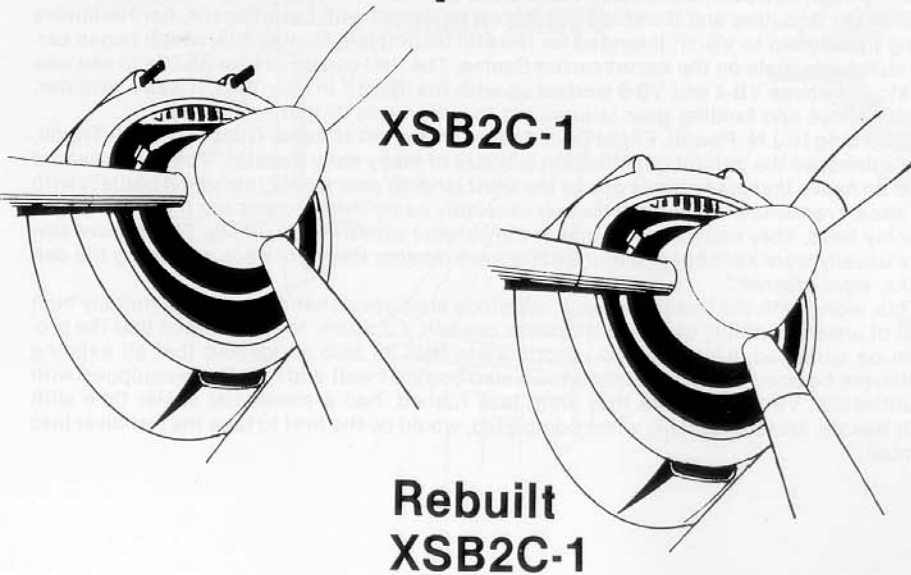
The modified prototype also added a chin scoop, breaking the smooth line of the cowling. Note the size of the Beast in comparison with the men pushing it out onto the apron at Buffalo, 28 November 1941. (C-W)





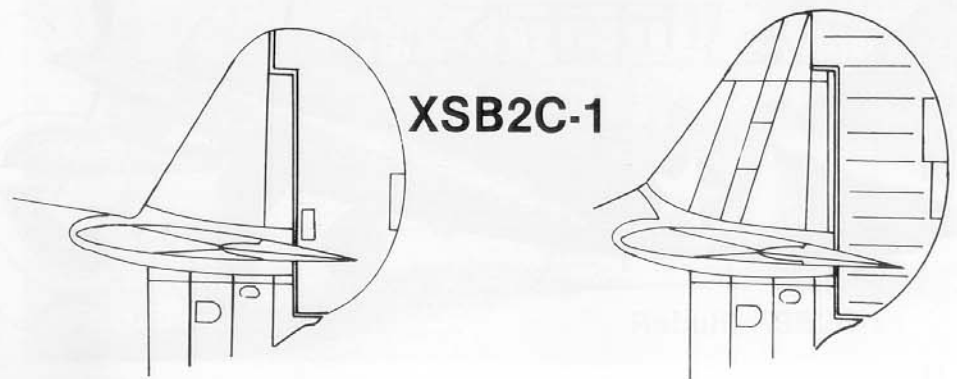
One of the last views of the XSB2C-1 prior to its destruction on 21 December 1941. The alterations to nose and tail solved some of the worst of the Beast's handling problems at normal speeds, but compressibility effects encountered during dives continued to plague Helldivers until the introduction of perforated flaps on the 'dash-3'. (C-W)

Nose Development



Prototype Development

Tail Development



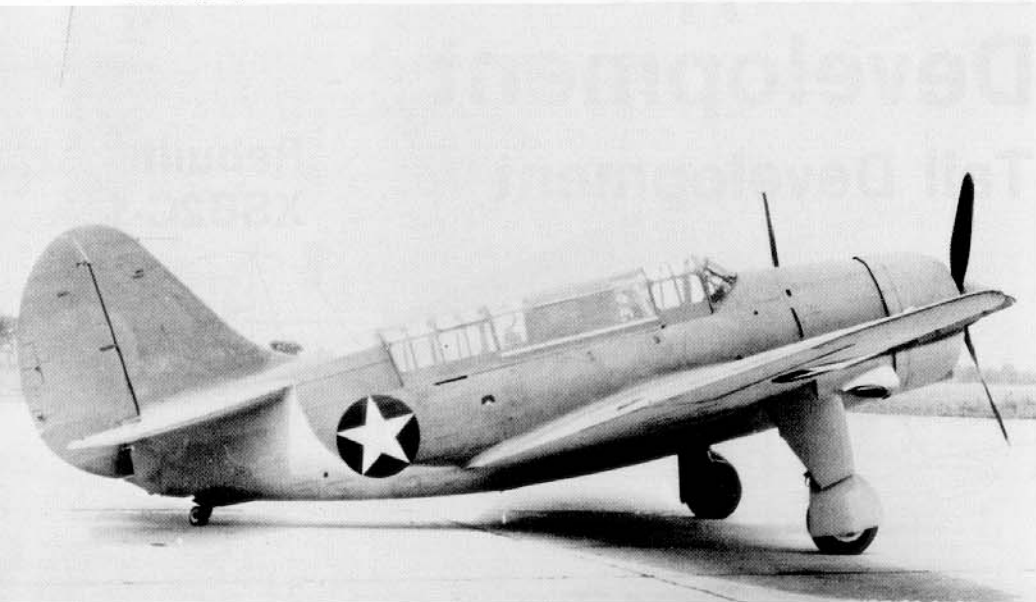
Rebuilt
XSB2C-1

SB2C-1

The initial production Helldiver was to have been completed at the Columbus plant in December 1941, with a production of 85 machines per month scheduled for April 1942. As with all other deadlines in this trouble-plagued program, it was not to be. In fact, it would be June 1942 before the first production SB2C-1, BuNo 00001, would roll out. In keeping with the general illogic of the Helldiver program, before that first 'dash-1' flew, during the period when there was no flying prototype, an additional 4000 aircraft were ordered. 1000 of these were to be SBWs, built by the Canadian Car & Foundry Ltd. at Fort William, Ont., for the Royal Navy, and were identical to the 3000 SB2C-1s BuAer ordered in June. Because so many questions had been left unanswered following the crash of the prototype and so many areas of the Beast's handling remained unexplored, the first 14 production 'dash-1s' were immediately assigned to flight testing, production validation and service suitability tests.

SB2C-1, BuNo 00001, when it flew on 30 June 1942, was a very different, and generally even less successful, aircraft than the prototype. As was the case with a number of other pre-war designed prototypes (such as the Bell P-39 and Curtiss P-40), the XSB2C-1 had met all performance criteria, but had done so without such production features as self-sealing fuel tanks, DF loop, radar or aircrew armor, and with lightweight magnesium forgings that would be replaced on production models with far heavier aluminum castings. The result was that empty weight rose from 7122LBS to 10,144LBS with predictable consequences for performance. Top speed dropped from 320 to 280 knots and landing speed rose from 69 to 79KTS. While payload remained unchanged, both climb rate and range suffered.

The first production Helldiver differed most noticeably from the prototype in the further enlargement of its tail and the elimination of the cowling mgs. This view shows BuNo 00001 on 2 July 1942, soon after roll-out. The color scheme is the already outdated two-tone Blue Gray and Light Gray. The DF loop can be seen in the front of the rear compartment. (C-W)



The SB2C-1 differed from the prototype in a number of readily identifiable features. Most obvious was a further enlarged tail. The prop reverted to the cuff-less style of the early prototype. The exhaust shrouds were moved forward by several inches, exposing more of the exhaust stub. An outlet for oil cooler air was added under the belly, tailwheel doors were deleted and the tailwheel was revised. The cowl guns were moved to the wings and a single .50 caliber replaced the twin .30s at the observer's position. Armored glass was added for the pilot, a reflector gunsight replaced the telescopic gun sight and the addition of a DF loop completed the cockpit alterations. A bomb rack and a rotatable Yagi antenna for the ASB radar was carried under each wing.

As the production tempo increased, and as the number of essential alterations to the Helldiver multiplied, a second line was set up in Columbus to take completed airframes off the assembly line and modify them to the then current standard. The original modification program, Mod I, was carried out in the field. These changes, necessitated by the early test results, were exclusively internal, being mainly alterations of, and restrictions on, control surface movement. The modification line began turning out Mod II aircraft in April 1943. Mod II changes numbered over 800, but the only externally visible alterations involved the deletion of the DF loop from the center cockpit and the fitting of a canted pitot tube. Mod III aircraft, which began to appear in mid-1943, had twin .30s reinstalled in place of the .50CAL at the observer's position and had the tail wheel locked into the extended position, often covered with a flexible rubber shroud. It wasn't until November 1943, when the 601st Helldiver rolled off the Columbus line, that all Mod III changes had been incorporated into the main production sequence, and the modification line could be shut down.

200 SB2C-1s (BuNo 00001-00200) were completed before being replaced on the line by the 'dash-1C'. The first Canadian-built Helldiver, a CC&F-production SBW-1, flew on 29 July 1943. Basically identical in design to a Mod III 'dash-1', 38 SBW-1s were built (BuNo 21192-21200 & 21203-21231) before being replaced on the line.

In spite of the disappointing performance of the first production aircraft, the Navy was committed to the rapid introduction of the Helldiver into fleet service. Flight testing proceeded at a breakneck pace. Even the crash of BuNo 00001 in January 1943 during dive tests didn't slow the momentum. Eventually, in November 1943, the cause of the tail buffeting that made high speed dives so dangerous was traced to compressibility effects brought on as the aircraft approached the speed of sound. The perforated dive brakes introduced on the dash-3 solved most of the problem. Until then, the Beast was restricted from 'clean' dives.

Enough production Helldivers were available for the first squadron test examples to be issued to VS-9 and VB-9 on Essex in November 1942. The carrier was desperately needed with the fleet, however, and couldn't afford the time to work up the Beast. The Essex sailed with her Scouting and Bombing squadrons equipped with Dauntlesses, her Helldivers being transferred to VB-17, intended for the still incomplete Bunker Hill, which began carrier suitability trials on the escort carrier Santee. The first carrier to take SB2Cs to sea was Yorktown, whose VB-4 and VB-6 worked up with the 'Beast' in May 1943. It was a disaster. Hook bounce and landing gear failures led to a high rate of barrier crashes.

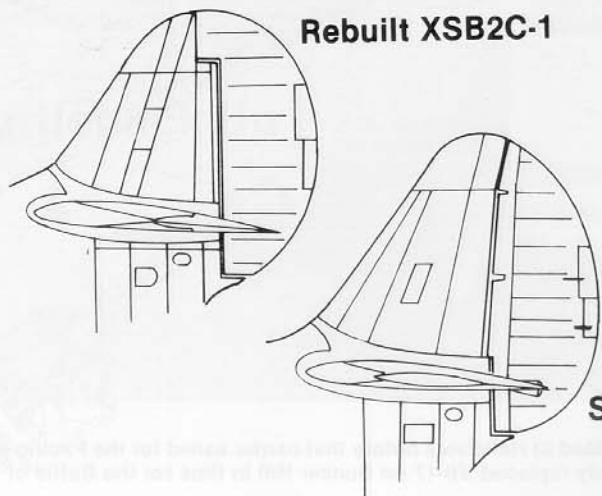
According to J.N. Powell, Flight Deck Crewman and relief Aerial Gunner on USS Tripoli, who witnessed the painful qualification process of many early Beasts: *"They all appeared to be so heavy that many times one of the front landing gear would fold up on contact with the deck. I remember once the tailwheel assembly came flying across the flight deck right over my head. They seemed to be one of the hardest aircraft to qualify in. The forward barriers usually were kept busy. When SB2Cs were landing the flight deck, including the catwalks, were cleared."*

This, along with the Beast's already notorious slow speed handling and a generally high level of unserviceability caused Yorktown's captain, J.J. Clark, to recommend that the program be scrapped. (Unconfirmed reports state that he also suggested that all existing Helldivers be used as anchors). Yorktown also couldn't wait and quickly re-equipped with Dauntlesses. VB-17, because they were less rushed, had a somewhat easier time with their Beasts, and Bunker Hill, when completed, would be the first to take the Helldiver into combat.

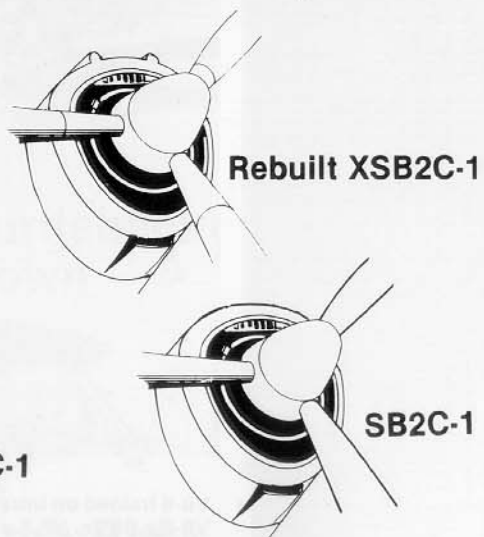
An early production SB2C-1 (BuNo 00016) over the flat Ohio countryside on 12 January 1943. Note the straight pitot tube and the DF loop, both characteristic of very early Helldivers. This Beast has the longer, production-style exhaust stubs. (C-W via Jim Sullivan)



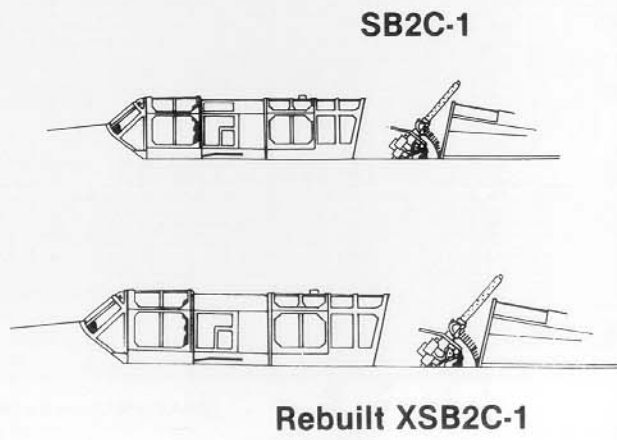
Tail Development



Nose Development



Canopy Development

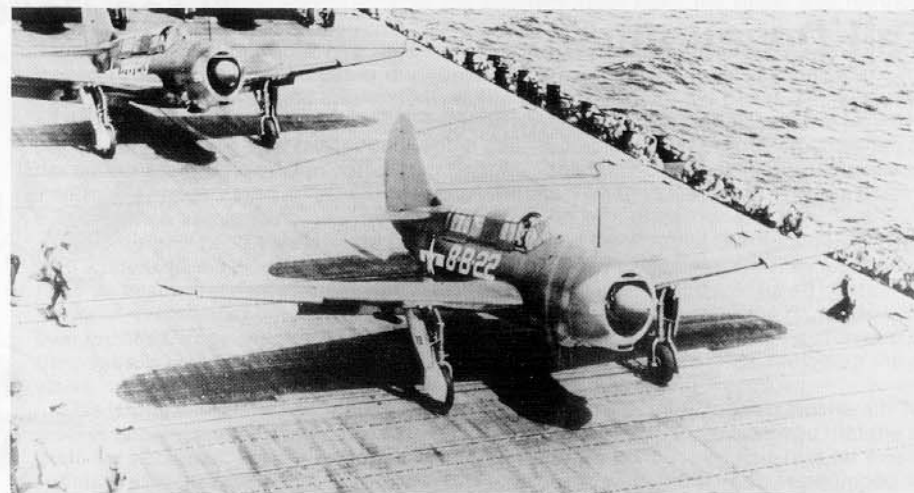
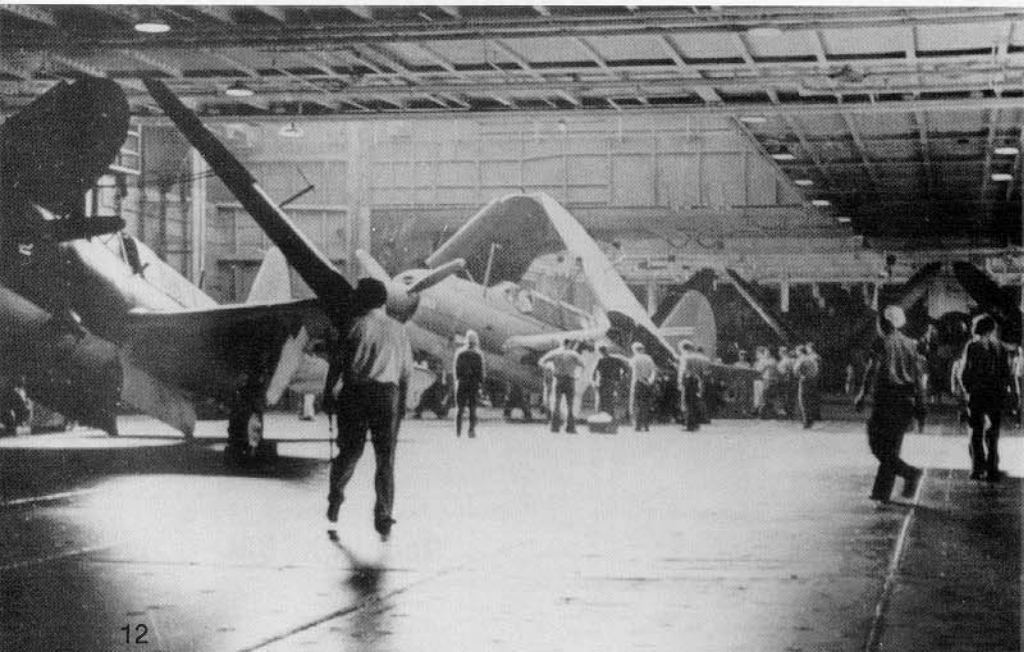
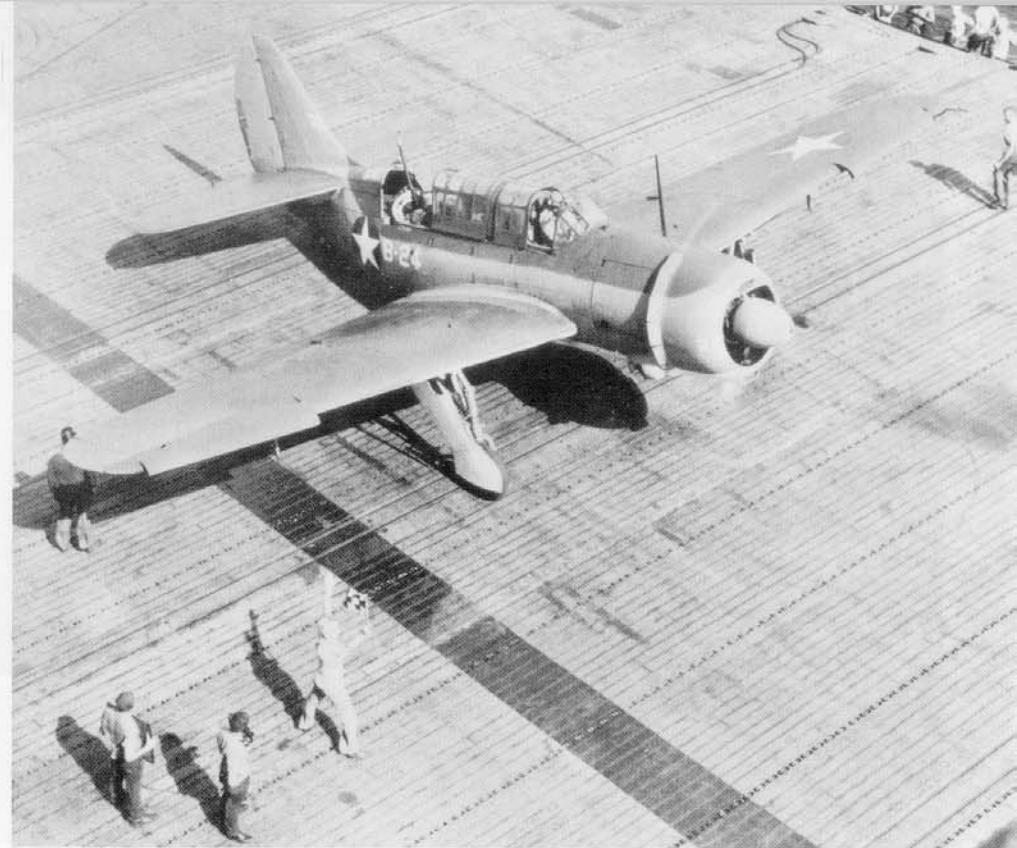




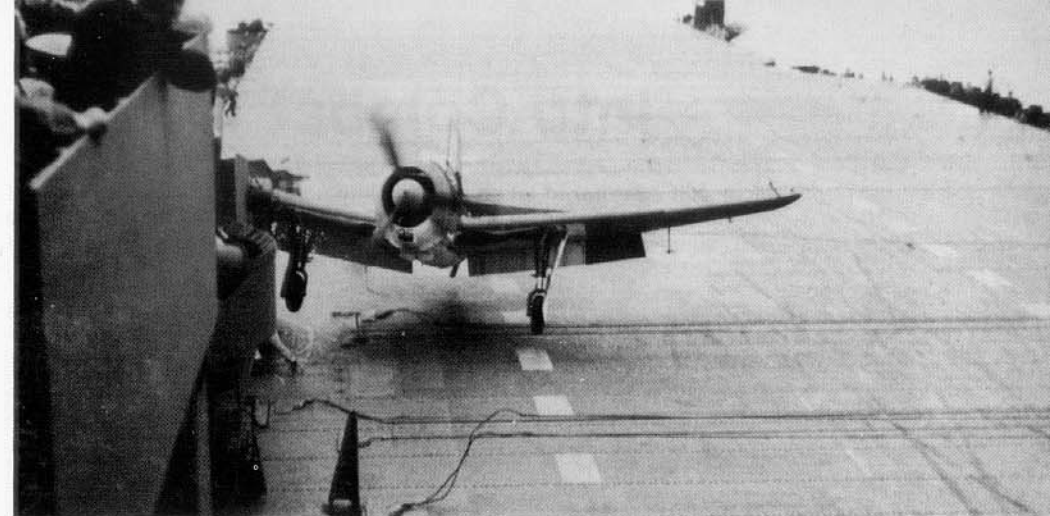
The first carrier trials for the Helldiver were a disaster. VB-4 and VB-6 took their Mod II Beasts to sea on Yorktown in May 1943. These aircraft carry the single .50cal flexible mg and the later-style bent pitot characteristic of Mod II SB2C-1s. (USN)

(Right) The test aircraft carried a neatly applied three-tone camouflage of Non-Specular Sea Blue, Intermediate Blue and White. The two stripes on the leading edge of the vertical tail are landing assistance stripes, not a unit marking. Here, 'B-24' gets the go for launch. (USN via Dick Hill)

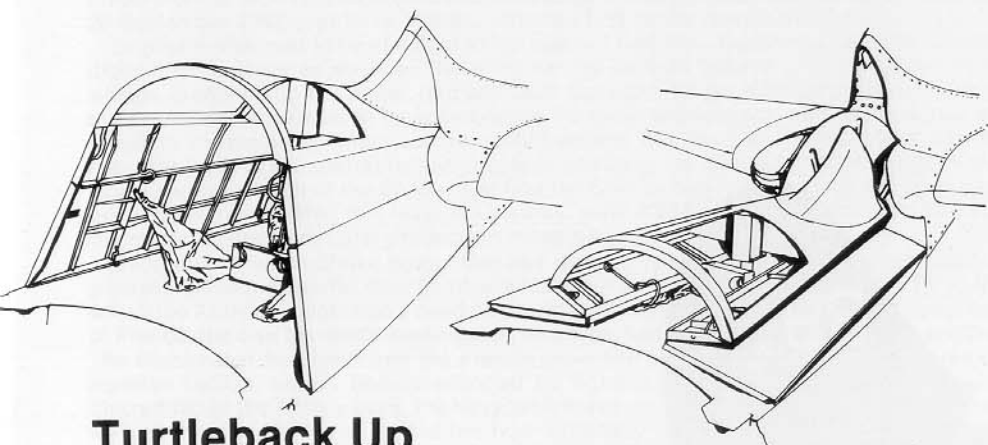
Included in the initial sea trials was a test of deck and hanger handling. The Helldiver was considerably larger than the SBD it was designed to replace but no bigger than the Avenger which had been in service for a year, and thus presented no new problems. (USN)



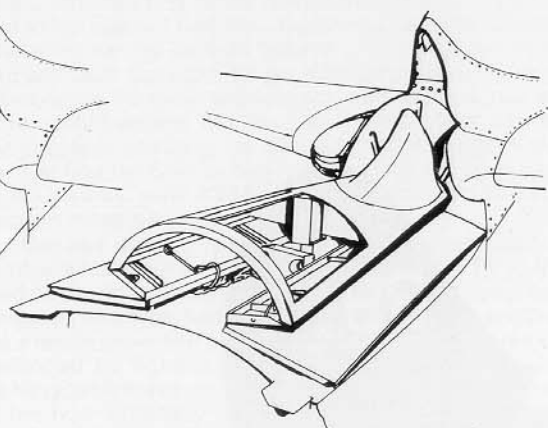
VB-8 trained on Intrepid in Mod III Helldivers before that carrier sailed for the Pacific with VB-6's SBDs. VB-8 eventually replaced VB-17 on Bunker Hill in time for the Battle of the Philippine Sea. (USN)



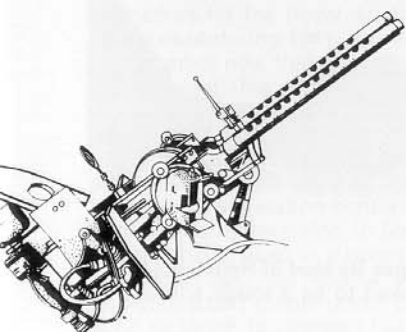
As with all units that transitioned into early Helldivers, VB-17 had its share of problems taming the Beast. It was involved in numerous barrier crashes or worse, as is the case with '35', a Mod III SB2C-1, caught in the process of turning itself into scrap on Bunker Hill, 11 September 1943. Note the red-rimmed national insignia. (USN/NARS)



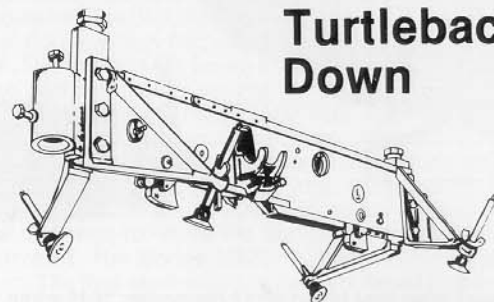
Turtleback Up



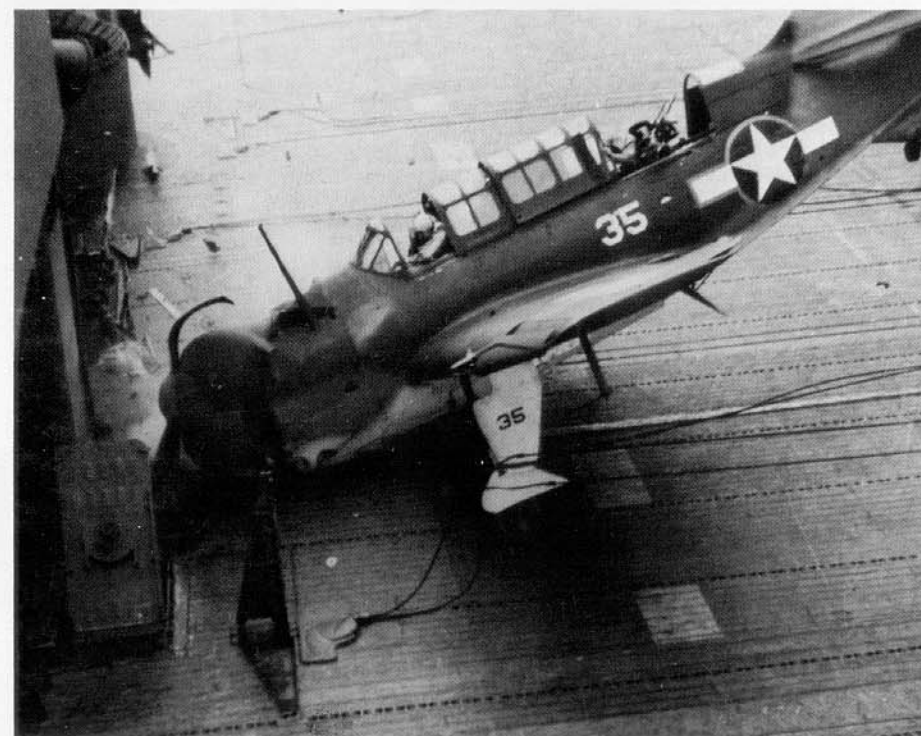
Turtleback Down



.30 Cal Turret



Bomb Rack



Incredibly, both crewmen walked away. (USN/NARS)

Into Combat

VB-17 off Bunker Hill was first to take the Beast into combat. Equipped with Mod III SB2C-1s, Bunker Hill sailed from Pearl Harbor on 21 October 1943 enroute to Espiritu Santo, where she joined TG 50.3 (Essex and Independence) for raids on the Bismarck Archipelago. On 11 November, VB-17's 23 Helldivers, led by LCDR James E. 'Moe' Vose, raided Rabaul.

VB-17 had begun training on the Helldiver in January 1943 but training had progressed slowly because the squadron:

"would operate for a month or so and then they would take away our 36 planes. We would borrow an SBD here and there, and a few SNJs, and fly those until our planes were returned".

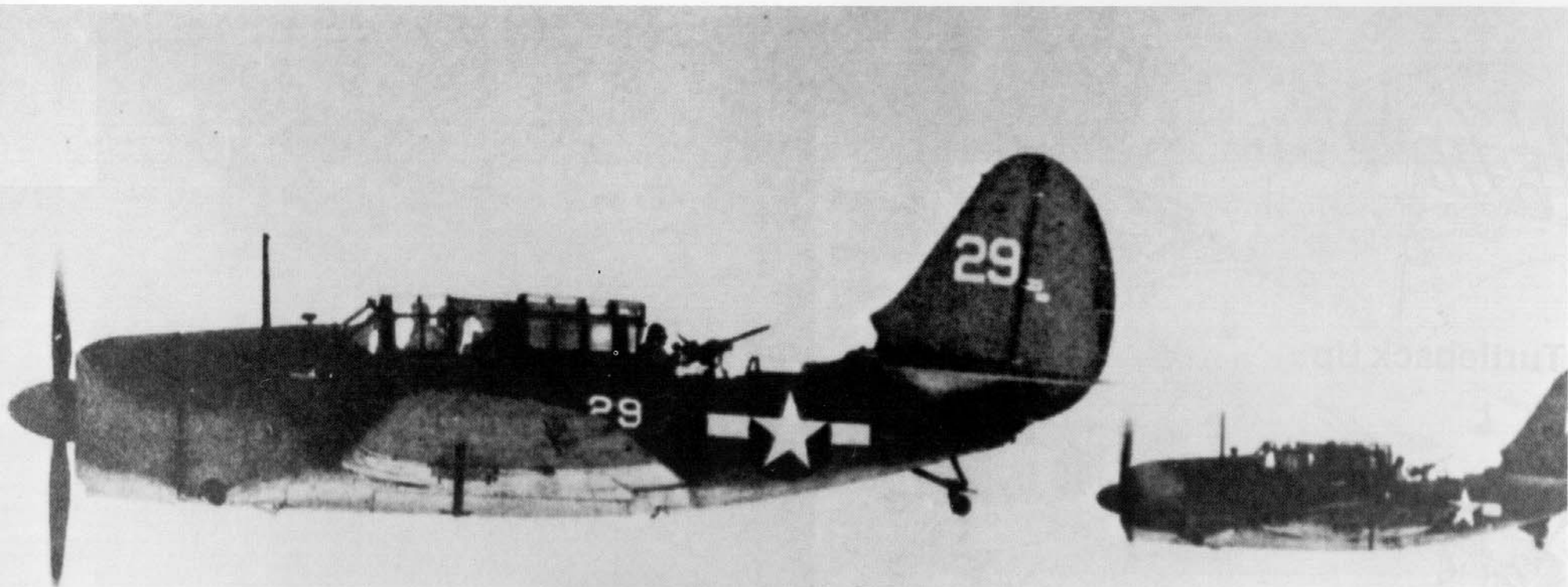
By November, however, VB-17 was ready. Vose describes that first raid:

"Well, we went into Rabaul the morning of November 11th...The Essex group led the way, we could see them ahead of us at all times. We started climbing as soon as we left the ship and got up to about 12,000 feet...We got all the way in without encountering any enemy fighter opposition - doubtless due to the splendid fighter protection. Over Blanche Bay we encountered anti-aircraft fire, rather heavy (and) extremely inaccurate. Meanwhile, Zeros equip-

ped with phosphorous bombs that exploded with long white streamers were flying over us, trying to drop (their bombs) on us. Then we launched our attack...As we came shooting through (the flak) a couple of our fighters would peel off and fly along with us. Two planes had been pretty badly shot up, and had to land in the water before they could get to the ship. They were in a division that had launched an attack on a cruiser and after they had dropped their bombs they went back and strafed the cruisers. By that time they were by themselves and had some trouble getting out of there...The planes that stayed together had no difficulty".

The destroyer Suzunami was sunk during that raid, and the cruisers Agano, Yubari and three destroyers were damaged. TG 50.3 then continued on to the Gilberts, becoming part of Operation Galvanic, the invasion of Tarawa. VB-17's 'Beasts' soon endeared themselves to the Marines down below with the accuracy of their bombing. It was the first sustained operation for the Helldiver and the new bird showed itself equal to the test.

"We were within 50 miles of Tarawa at times and kept going constantly. On the 18th and 19th of November we bombed just as much as we could during the hours of daylight. We had one big strike on the morning of the 20th and from that time on we had what we called an Air Support Force - six SB2Cs and four fighters over there all the time. As soon as we'd get there we'd be sent on a mission by the Ground Support Command. We'd drop our bombs, come back to the ship, load up and go out on another run".



The Beast drew first blood on 11 November 1943 when VB-17 took its Mod III Helldivers to Rabaul. In the hands of experienced pilots, the Helldiver proved to be a tough and accurate bomber. (USN)

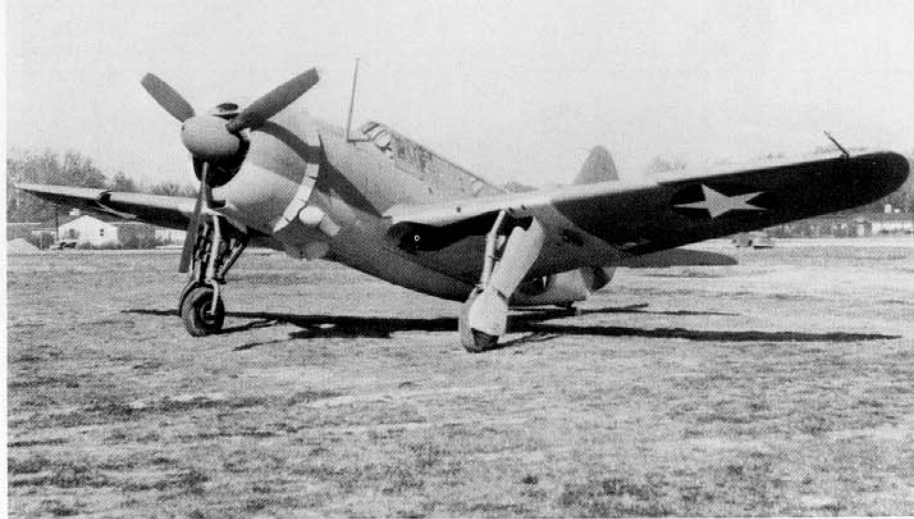
A-25A Shrike

While the US Navy had been operating purpose-built dive bombers off its carriers since the early 1930's, the Army Air Corps showed little interest in the type until 1940. Witnessing the success of German Stukas punching holes in the French defenses on the Meuse, USAAC planners belatedly set out to fill the gap. Since the development of an all-new aircraft would take too long, the obvious alternative was to modify existing Navy types. Accordingly, an order was placed with Douglas for Dauntlesses and with Curtiss, on 31 December 1940, for 100 A-25As (Navy designation - SB2C-1A, Curtiss Model 584).

The size of this initial order caused no serious problems, but when the Army let it be known early in 1941 that it intended to multiply that order many times over, the Navy balked. On top of the already massive Navy requirements, any significant USAAC order would overwhelm the Columbus plant. The obvious solution was to establish a second assembly line. By the end of 1941, the Army's Materiel Command ordered Curtiss-Wright to convert its St. Louis plant to the production of the Shrike (as the Army Helldiver was called) preparatory to receiving an order for 3000 A-25As in spring 1942. The first Shrike flew on 29 September 1942, just three months after the first of the Navy's SB2C-1s.

Originally intended to be identical to the 'dash-1' Helldiver, the Shrike began to acquire distinctive features as soon as the Army set up its own assembly lines. Larger main wheels, a pneumatic tail wheel, ring and bead gunsight, longer exhaust stubs and Army-style electronics were all to be added, while the radar and tailhook were deleted. In an attempt to maintain maximum commonality between the two assembly centers, and to make the work of subcontractors as simple as possible, the Navy adopted the larger main wheel and wheel well of the Shrike. The first ten Shrikes had folding wings but all subsequent machines deleted this feature. Likewise, early A-25As had their wing slats fixed in the retracted position. Later production models had the slats deleted entirely.

By late 1943, when Shrike production had reached full stride, the Army found itself in possession of a powerful dive bomber which met all the requirements of the type, for which the Army no longer had a need. In the intervening years since the German conquest of France, the dive bomber's weaknesses, as a type, had begun to outweigh its strengths. The Stukas that had terrorized the French proved to be easy meat for RAF Spitfires or Russian LaGGs, unless heavily escorted by fighters. Although the dive bomber was discredited in the Army's eyes, the Navy, which was used to sending heavy fighter escort with all strikes, continued to find the type extremely useful. Since the Army no longer wanted the Shrikes it had, the problem was now what to do with the 900 A-25As (s/n 41-18774-873, 42-79663-80462) produced before the St. Louis line was shut down. 150 were earmarked for the Royal Australian Air Force, which had requested dive bombers from Lend-Lease during 1941. But the RAAF, like the USAAF, found that it no longer needed a dive bomber now that it finally had one, and particularly not the Helldiver which it found totally unsatisfactory. Except for the original 10 test aircraft (A69-1-10), the Australians refused the rest of the order, leaving the Army Air Force with a worse problem than before. Finally, agreement was reached with the Navy, whereby the Marines took 410 of the A-25As (as SB2C-1As, BuNo 75218-588 ex-42-80053-423 and BuNo 76780-818 ex-42804424-462), including the 140 rejected RAAF Shrikes, for use as land-based dive bombers. Modification centers were established to return the Shrikes to Helldiver standard, primarily reversion to Navy electronics. The Marine SB2C-1A, however, never saw combat, being used as trainers and such. The first Marine unit to take the Beast into combat, VMSB-244, flew 'dash-4' Helldivers. The remaining USAAF Shrikes were reduced to non-combatant status under the designation RA-25A and assigned to secondary duties such as target towing and training.



The Shrike prototype, still in Navy camouflage and carrying BuNo 00006 on its tail, is seen at Wright-Patterson Army Air Field, 27 October 1942. The prototype had the extended exhaust and smaller fixed tailwheel of production A-25As but retained such very early Helldiver features as the DF loop and lack of a flexible gun. (WPAFB/NARS)





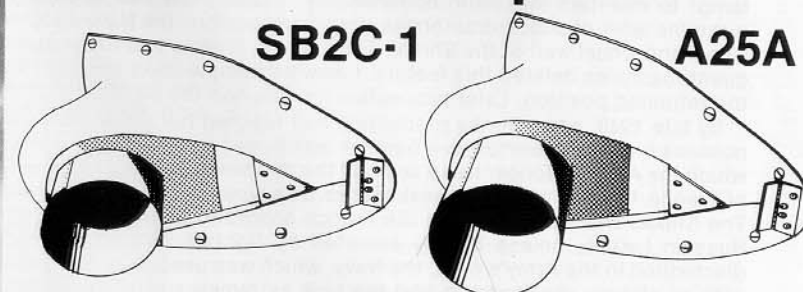
The first production A-25A-1-CS (s/n 41-18774) is seen on 23 December 1942. Except for the lack of gunner's armament, this is a standard Shrike. It is in typical mid-war USAAF camouflage, Olive Drab and Neutral Gray with Medium Green patches on the edges of the wings and tail. The paint is still new and the desired effect, that of breaking up the shape of the aircraft, is being achieved. (Hal Andrews via Jim Sullivan)

(Left) 41-18787, an A-25A-5-CS with the standard single .50CAL flexible mount, is seen on 12 August 1943. Here the paint has weathered, and the OD has faded much more than the Medium Green. This accentuates rather than breaks up the edges of the flight surfaces. (WPAFB/NARS)

A pair of mid-production A-25As over the mountains somewhere in the western U.S. No Shrikes left the continent or saw combat, although some were used as coastal patrol aircraft. (USAF)

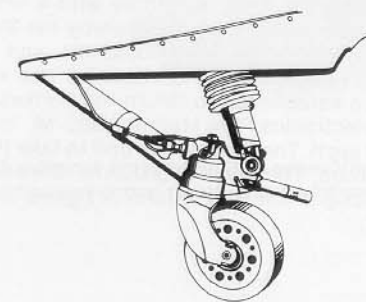


Exhaust Development

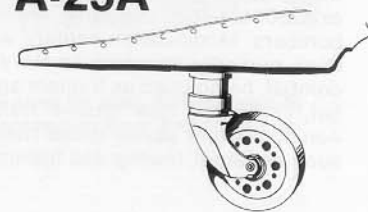


Tailwheel Development

SB2C-1



A-25A





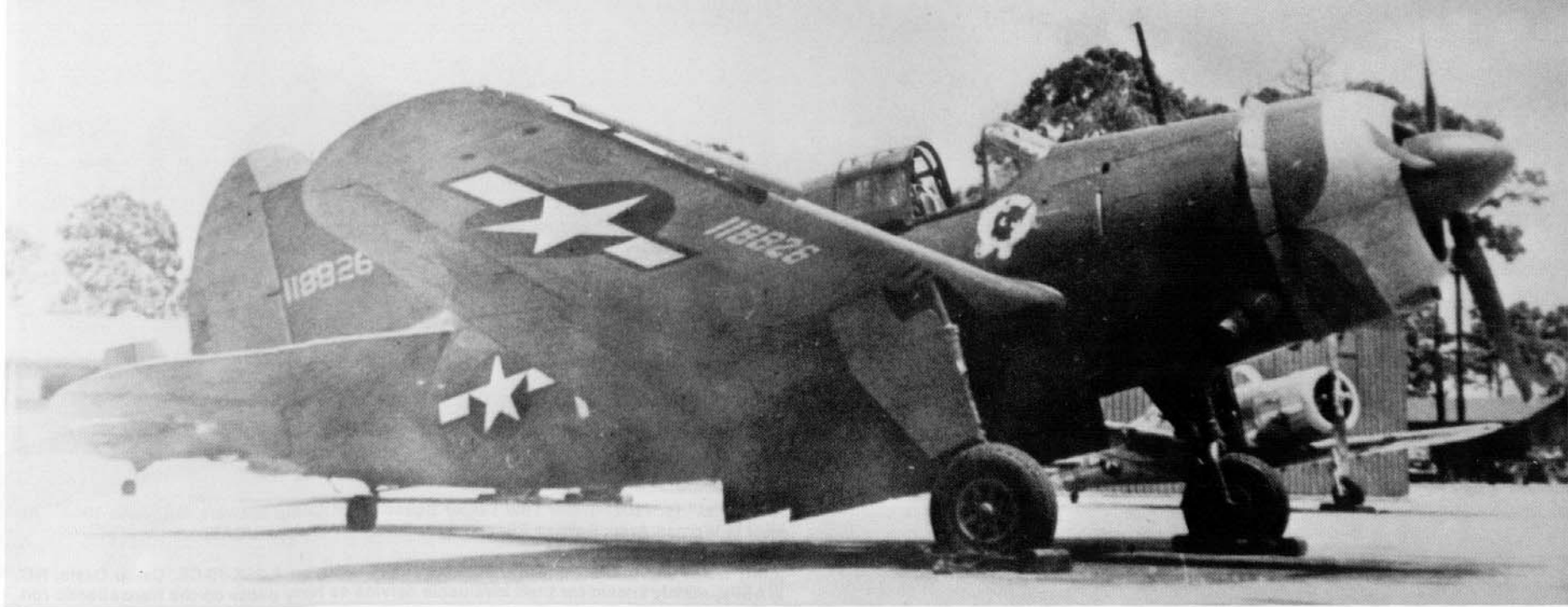
Kathie "M" is 'T202' of the Tow Target Squadron at Camp Stewart, GA, June 1944. The pilot is Woman Army Service Pilot (WASP) Helen W. Snapp. (USAF)



(Left) WASPs gather around the cockpit of 41-18836, an A-25A-10-CS, Camp Davis, NC. WASPs, mainly known for their invaluable service as ferry pilots on the transatlantic run, also served as target-tug pilots at numerous training bases. This was the duty to which most Shrikes were assigned. (USAF)

Shrikes used as tugs or trainers were reclassified as a non-combat type and redesignated RA-25As (R for Restricted). (Bill Larkins via Jim Sullivan)





One of the few Shrikes to receive colorful markings, this A-25A-10-CS of the 13th FS (not BS) has an Orange cowl and fin tip. Note the serial repeated under the right wing. The 13th FS stayed at home as part of continental air defense, being based at various fields in Florida, except for a brief stint in the Canal Zone during 1942. (Lt. Col. J.W. Boyce via Ernie McDowell)



(Left) The RAAF requested 150 Shrikes while the Helldiver was still on the drawing board. In the event, only 10 were delivered to Australia and they were rejected after brief flight testing. A69-29 never even got that far. It is seen here over Ohio in 1943. It reverted back to the USAAF, eventually becoming a Marine SB2C-1A. (NASM)

One of the 10 that were tested by the RAAF at No. 1 APU Laverton during 1944. The RAAF cocarde has a Yellow surround and the tail carries a tricolor RAF-style fin flash. (C-W)



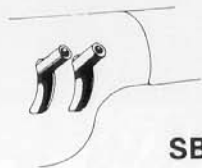


SB2C-1C

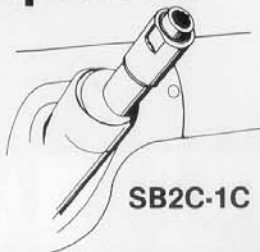
The changes and modifications that had so far been authorized for the SB2C-1 were brought together in early summer 1943 in a 'rationalized' form, which was given the designation SB2C-1C. All the cumulative Mod III changes were incorporated and some additional alterations were made. The most obvious of these was the replacement of the twin .50CAL mgs in each wing with a single 20MM cannon. Other, less obvious, changes included a slipstream baffle added to the gunner's sliding canopy and hydraulic assist was provided for flap actuation.

The SB2C-1C was the main production variant of the dash-1 series, a total of 778 being produced by Curtiss (BuNo 00201-370, 01008-1208 & 18192-598). By the spring of 1944, the 'dash-1C' had replaced earlier models in all operational squadrons. This was also the initial main production model of both Canadian producers. The 50 Fairchild SBF-1s (BuNo 31636-85) and 28 CC&F SBW-1Bs (BuNo 21201-2 & 60010-35) were basically identical to the SB2C-1C. 26 of the SBW-1Bs (RAF JW100-125) were sent to the Fleet Air Arm's test establishment at Farnborough in October 1944, where they were politely, but firmly, rejected.

Armament Development



SB2C-1



SB2C-1C

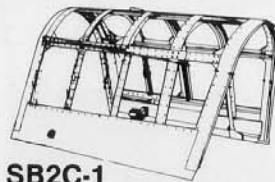
The first SB2C-1C (BuNo 00116) is seen at Curtiss' Columbus plant. The single 20mm cannon in each wing is the most noticeable distinguishing feature. The straight pitot tube identifies this as the prototype. (C-W)

SB2C-1C production officially began with BuNo 00201. Here 00245 is seen at Buffalo on 20 August 1943. The tail designation still reads SB2C-1 rather than -1C. (C-W via Jim Sullivan)

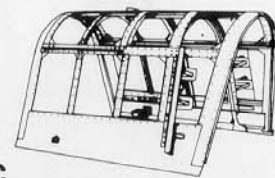




Canopy Development

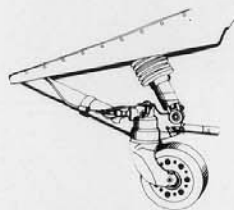


SB2C-1

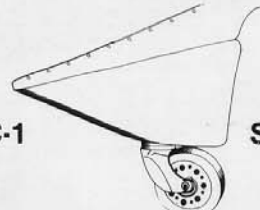


SB2C-1C

Tail Wheel Development



SB2C-1



SB2C-1C

After Bunker Hill's original employment of Helldivers over Rabaul, SB2C-1Cs began to equip VBs on new carriers and replace SBDs on older ones. At the time of the Truk raids in February 1944, VB-17 was still the only front-line Helldiver unit but by June there were five. VB-2 worked up in SB2C-1Cs on Hornet in early 1944. Here '50' engages the barrier, 24 April 1944. The White dot on its tail was the Hornet air group insignia. (USN/NARS)

A pair of 'dash-1Cs' off Yorktown (VB-1) fly patrol near Guam, 13 May 1944. '70' originally had the number on her tail but had it moved to the rudder when Yorktown's diagonal stripe was added. (USN via Dick Hill)

Three Essex Helldivers of VB-15 are seen in flight, 10 May 1944. Two carry the horizontal White stripe on the tail and rudder that became the marking of the Essex air group. (USN/NARS)



Helldiver's into Action

The success of VB-17's first deployment of the SB2C vindicated the Navy's faith in the bird, and the fact that 'dash-1Cs' were now rolling off the Columbus line at a good pace meant that Helldivers would rapidly replace the SBD Dauntless as the Navy's standard dive bomber. At the time of the Truk raids in February 1944, Bunker Hill was still the only SB2C-equipped carrier with the fleet. By June, in time for the Battle of the Philippine Sea, only Enterprise and Lexington still retained their Dauntlesses. SB2C-1Cs equipped VB-1 (Yorktown), VB-2 (Hornet), VB-8 (replacing VB-17 on Bunker Hill), VB-14 (Wasp) and VB-15 (Essex).

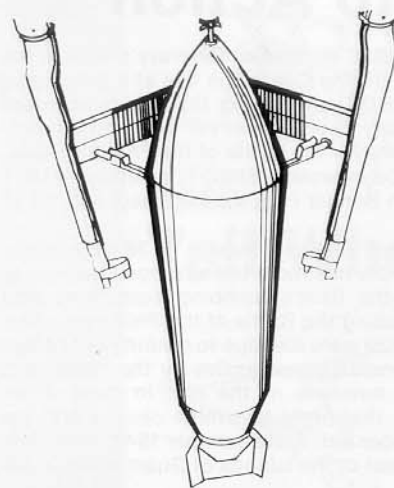
By October, at the time of the Battle for Leyte Gulf, all nine VBs with TF 38 were equipped with Helldivers and all but Bunker Hill's VB-8 now had more the advance 'dash-3s' or 'dash-4s'. The replacement of the SB2C-1C in the fleet's bombing squadrons was facilitated by the large number of Helldivers lost during the Battle of the Philippine Sea. Only four of the 51 lost fell to Japanese action, but 39 were lost due to running out of fuel or deck crashes in the dark. This number was considered excessive by the Helldiver's critics, but is not out of line when the relative newness of the bird to most of its squadrons is considered. (23 Avengers were lost that night to similar causes and the TBF/TBM had been the standard fleet torpedo bomber since late summer 1942). In action, where it counted, in the skies over the Japanese fleet or the islands of Guam or Rota, the Helldiver proved itself tough and accurate.

Two squadrons of Helldivers were launched against Marcus on 19 and 20 May 1944. For the first time, Beasts met heavy and accurate flak and came through with flying colors. Many pilots who deplored the Helldiver's poor handling were won over by its ability to absorb damage. The three views on this page show SB2C-1Cs of VB-15 on return to Essex on 20 May. '8' lost its spinner and '7' lost a large chunk of its rudder to Japanese AA fire but both landed back safely. The crew of '13' show their happiness at surviving the two days of raids. (USN/NARS)

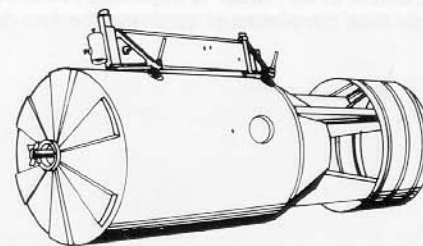




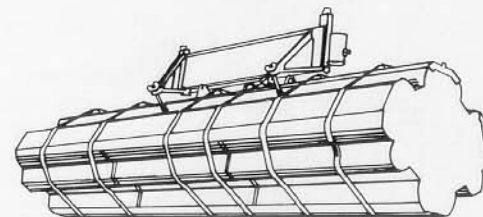
Arming and fueling aircraft and positioning ready aircraft on deck were practiced repeatedly during the slack days between raids. The ability of US deckcrews to handle aircraft rapidly in action was a major factor in more than one battle. With fire extinguisher at the ready, a crewman watches one of VB-15's Beasts being tanked up, 10 May 1944. (USN/NARS)



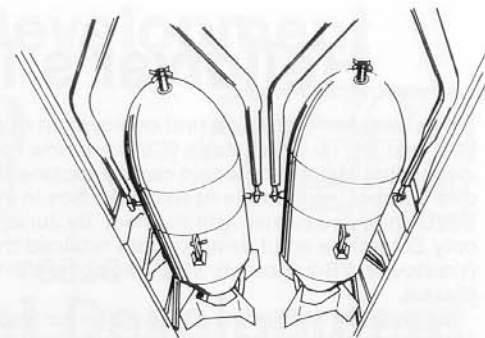
1 x 1000 lb Bomb



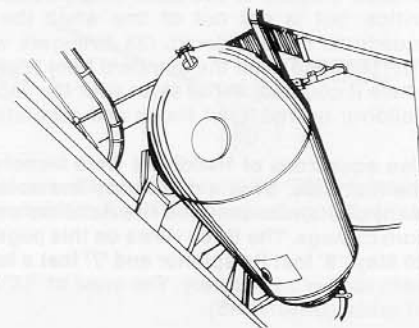
Depth Charge



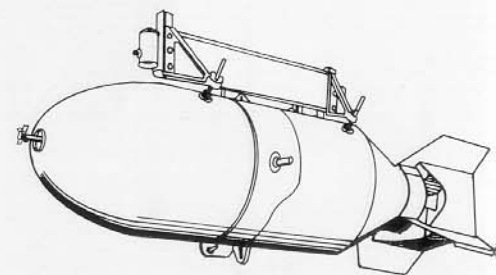
Cluster Bomb



2 x 500 lb Bombs



Smoke Canister



500 lb Bomb



One of VB-15's SB2C-1Cs snags a late wire and the barrier as it literally screeches to a halt, Essex, 20 May 1944. (USN/NARS)

Some of the Beast's failings couldn't be blamed on the pilot. This SB2C-1C lost its bomb through its bomb-bay doors - while landing back on Essex, 20 May 1944. (USN/NARS)



'66' of VB-2 has gotten itself into an embarrassing position in front of Hornet's forward radio mast, 19 July 1944. (USN/NARS)

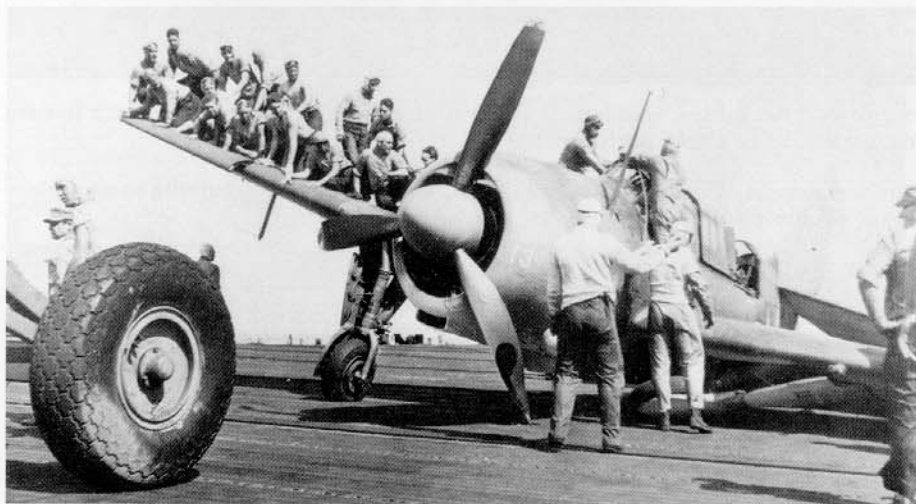
The same aircraft is seen seconds later. The crew is alive and well but with some explaining to do. (USN/NARS)



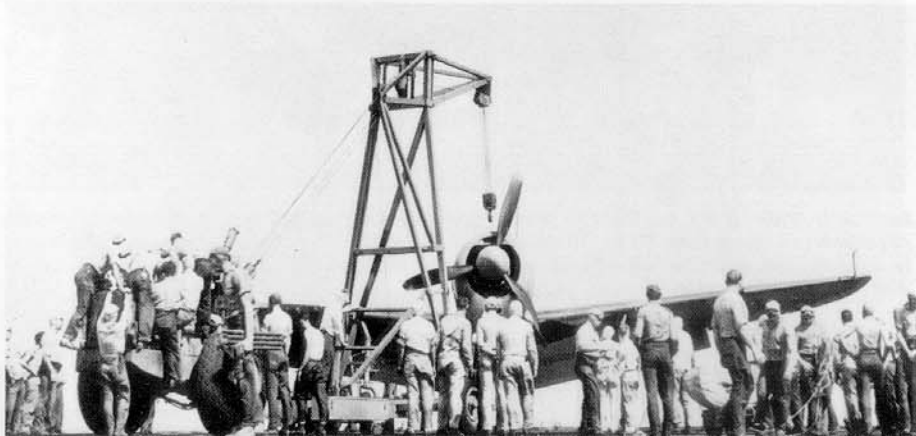


Another endearing quality of early Helldivers was frequent main gear collapse. Here, '13' plants its left wing on landing, Essex, 20 May 1944. (USN/NARS)

Recovery crews were prepared for this kind of accident. Every available hand climbs up on the high wing while a crane is wheeled into position. (USN/NARS)

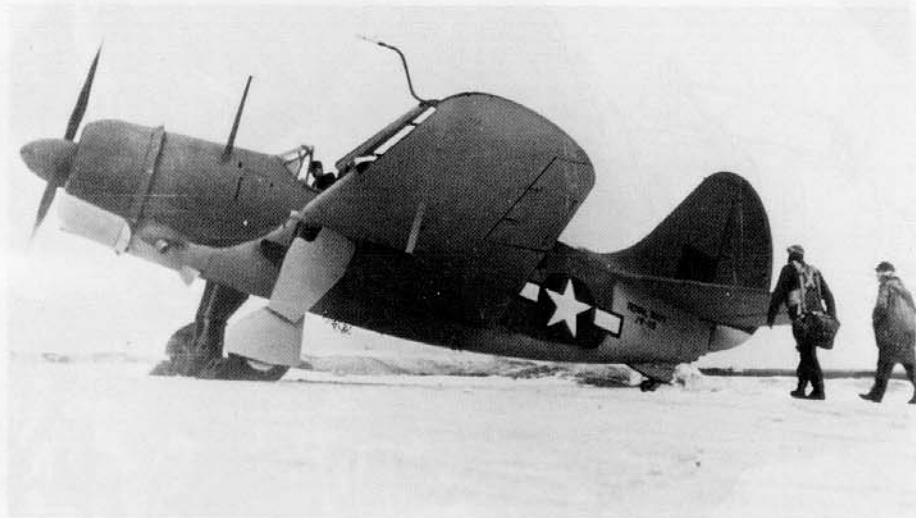


Within minutes, '13' is back on three wheels. Had there been other aircraft waiting to land, no such elaborate salvage would have been attempted. She would simply have been pitched over the side. (USN/NARS)

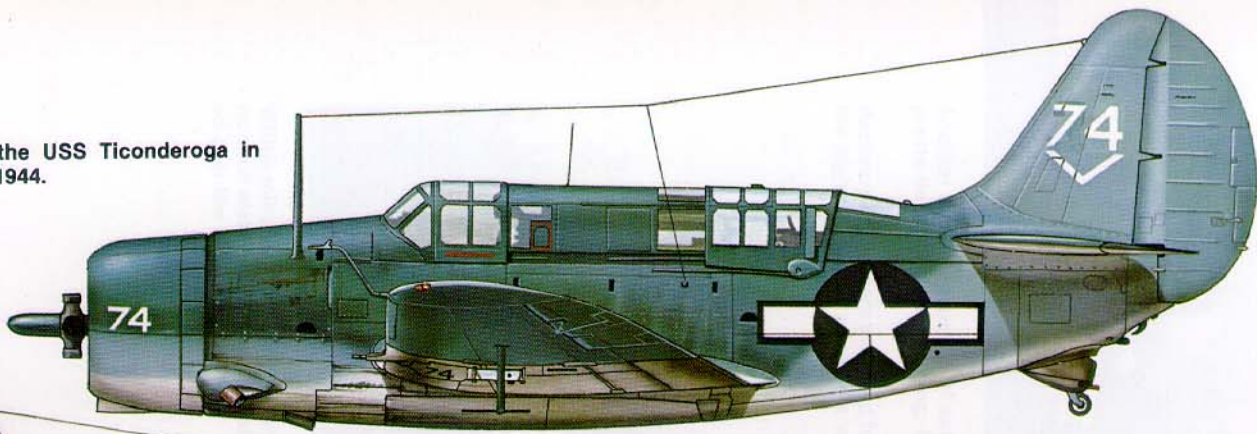


26 SBW-1Bs (Canadian Car & Foundry-produced SB2C-1Cs) were delivered to the Fleet Air Arm's No. 1820 Sqdn. for evaluation but were found to be unsatisfactory and were returned to the US Navy. JW117 (ex-BuNo 60027) is seen at RAF Farnborough in May 1944. (NASM)

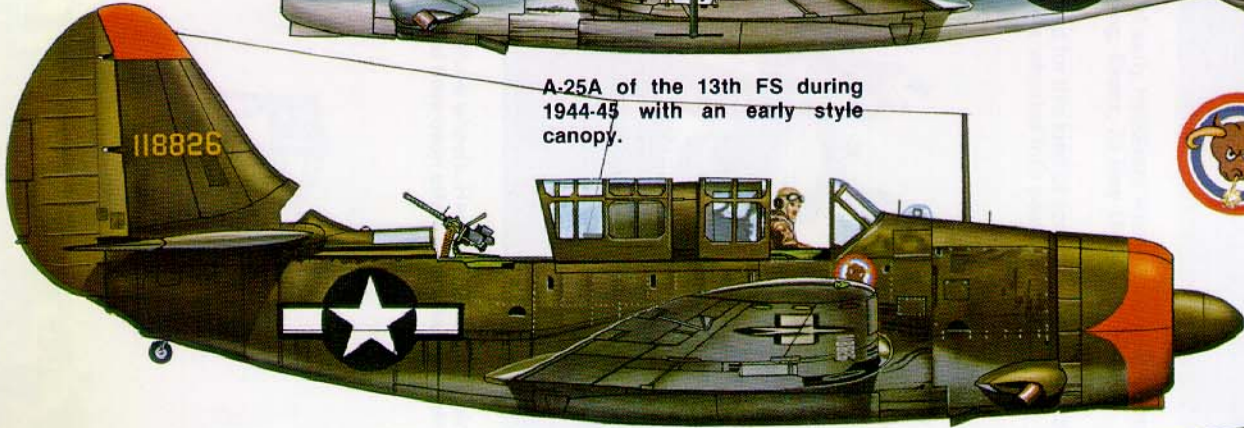
JW118 (ex-BuNo 60028) is back in US markings though still in Royal Navy colors. The fin flash has been painted out but the RN serial retained. (CNFB via NASM)



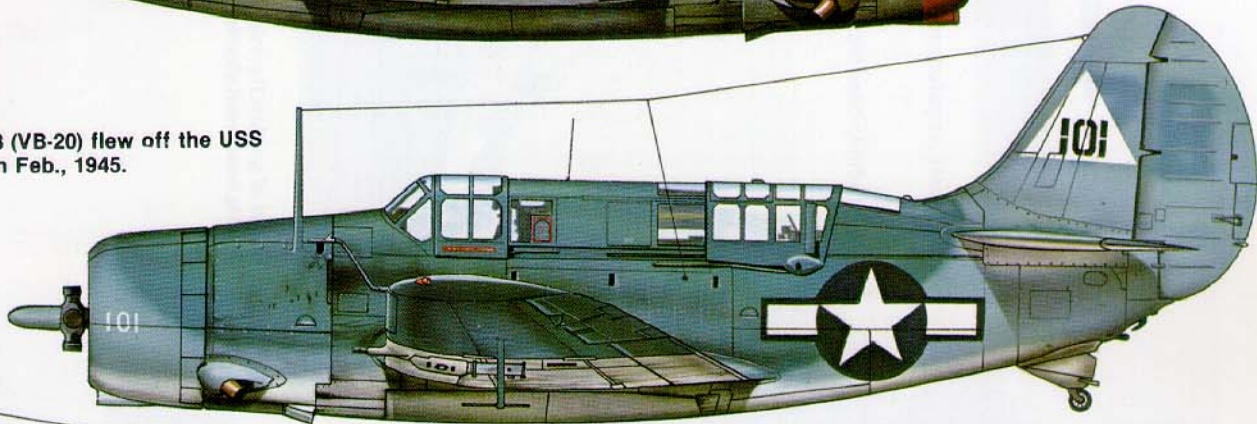
SB2C-3 of the USS Ticonderoga in November, 1944.



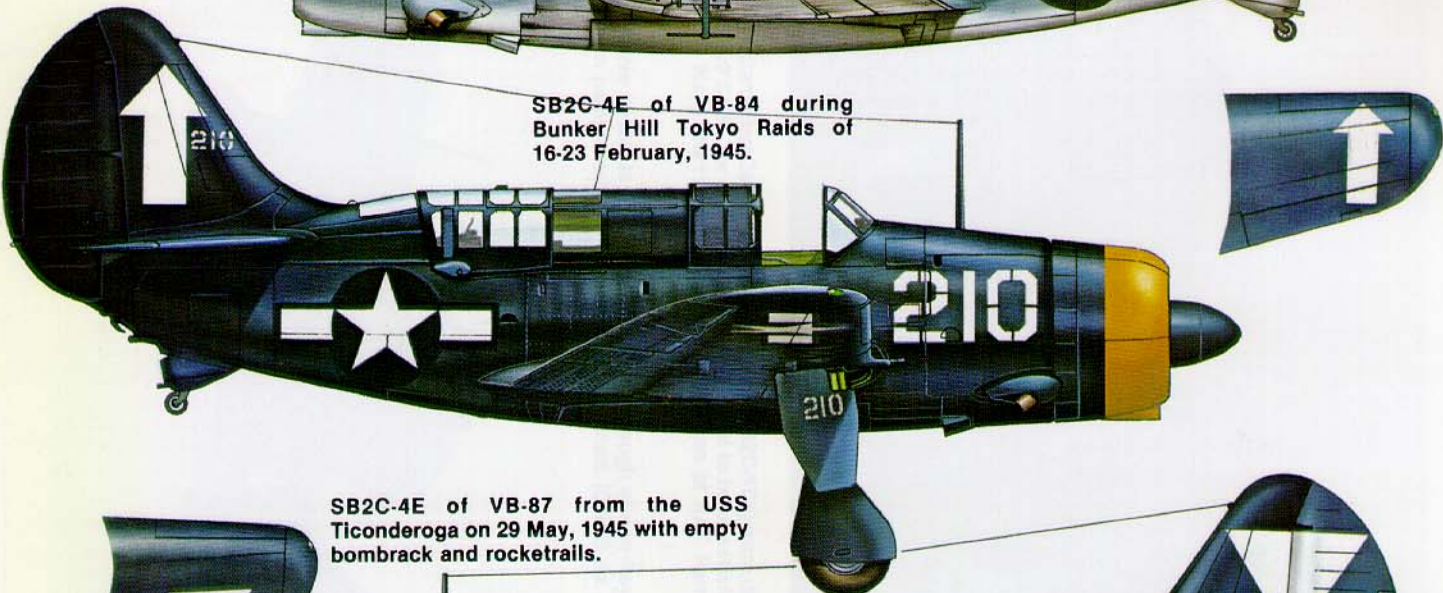
A-25A of the 13th FS during 1944-45 with an early style canopy.



This SB2C-3 (VB-20) flew off the USS Lexington in Feb., 1945.



SB2C-4E of VB-84 during Bunker Hill Tokyo Raids of 16-23 February, 1945.



SB2C-4E of VB-87 from the USS Ticonderoga on 29 May, 1945 with empty bombrack and rocketrails.



Baby II, SB2C-4 of the Bombing Banshees (VMSB-244) off Mindanao in June, 1945.



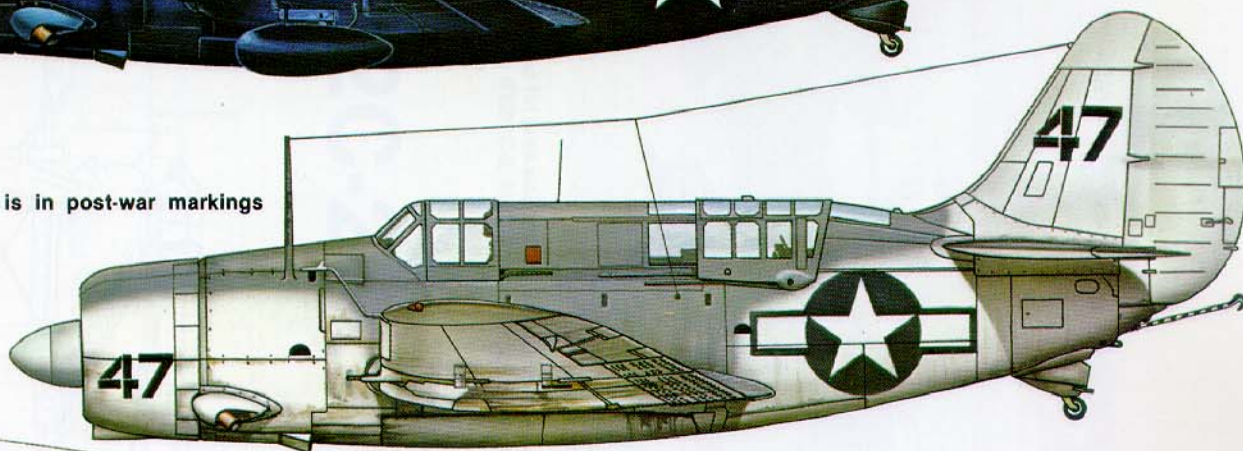
This SB2C-4E of VB-16 flew off of the USS Randolph, 30 July, 1945.



August, 1945, SB2C-4E from the Ticonderoga, VB-87.



This SB2C-4E is in post-war markings from 1946.



SB2C-5E of the Aeronavale Esc 3F in Vietnam, 1954.



XSB2C-2

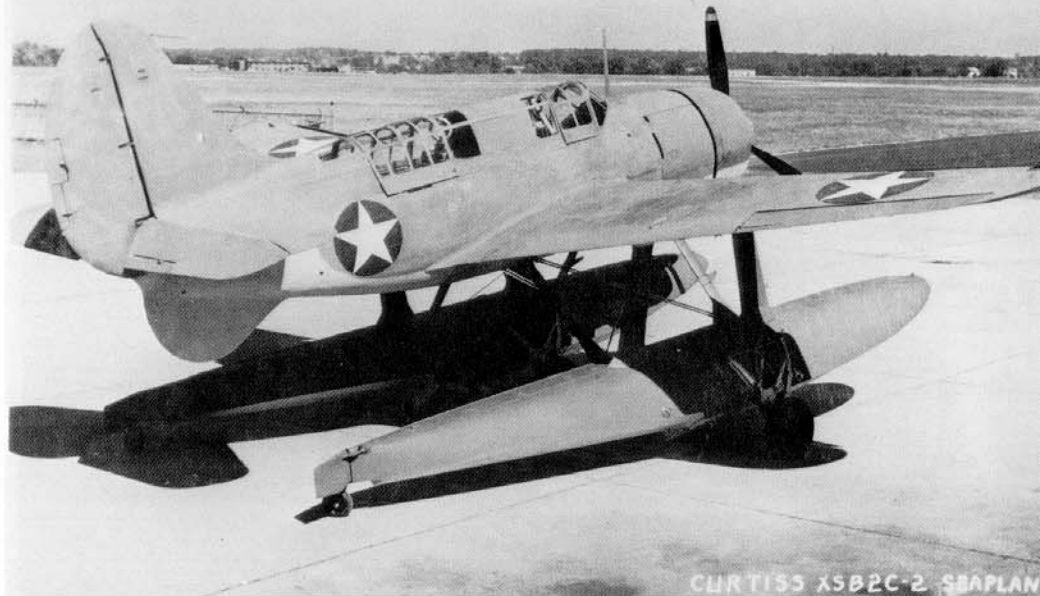
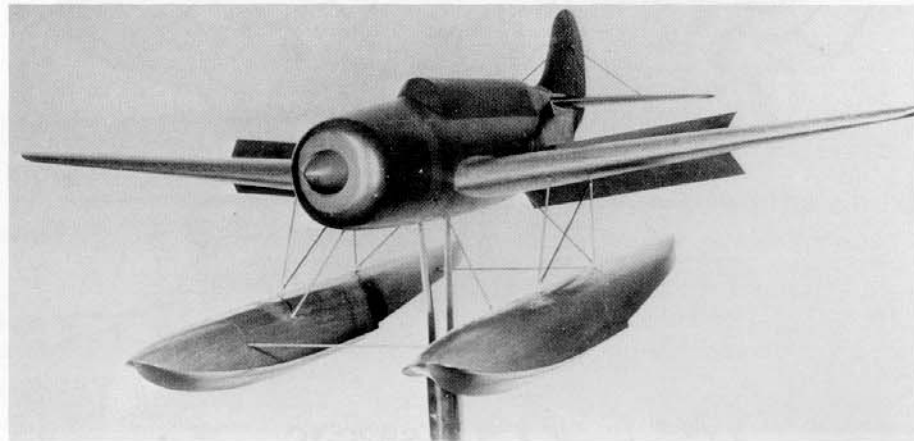
In much the same way that the A-25A came into existence in belated response to the success of Germany's Stukas, the XSB2C-2 originated in response to the successful use by the Japanese of seaplanes, specifically the Nakajima A6M2-N Rufe. Japanese seaplanes were first encountered by the US Navy when they provided cover for the occupation of Guadalcanal from a hastily established base at Florida Island. The use of the Rufes to project airpower into areas where none existed before, far from land air bases and the normal operating areas of the few available aircraft carriers, came as a shock to the Navy, which had no equivalent aircraft.

While the US Navy had a long tradition of shipboard, catapult-launched observation floatplanes, it has no seaplanes of a more offensive nature. Accordingly, a single SB2C-1 (BuNo 00005) (and also an F4F-3 Wildcat and TBD-1 Devastator) was fitted with Edo floats and transported to NAS Anacostia for tests.

The resulting aircraft was designated the XSB2C-2. Essentially the same as the dash-1 Helldiver from which it was modified, it differed primarily in the substitution of two huge single-step floats braced by four pairs of sloping struts in the place of the standard landing gear and the addition of a ventral fin under the rear fuselage.

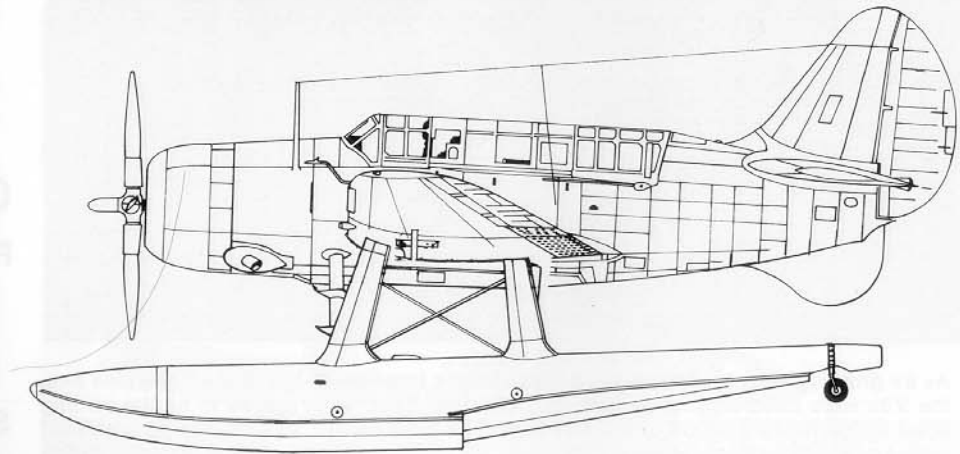
The flight characteristics of the 'dash-2' were generally satisfactory, but the take-off run was considered to be excessively long, mainly due to the great weight of the prototype, almost 15,000 lbs loaded. Nevertheless, the XSB2C-2 passed its initial tests on the Potomac and the subsequent rough water tests at Hampton Roads in March 1943. Initial plans called for 294 SB2C-2s to be built, but by the time Helldivers were available in sufficient numbers to make such conversion practical, the need for a float-scout-bomber had passed. Like the Stuka in Europe, the successful use of floatplanes by the Japanese in the Solomons proved to be the result of a unique situation which was unlikely to recur. Floatplanes can be very effective when no other airpower exists in an area, but the massive expansion of the US Navy's carrier fleet, and the speed with which Seabees could establish new land airbases, created a situation in which such 'voids' in conventional airpower no longer existed. And even the best floatplane, because of the performance degradation caused by the huge floats, is easy prey for land - or carrier - based fighters. The entire order was cancelled on 14 April 1944.

Seen on 17 July 1942, the original wooden wind tunnel model of the XSB2C-1 now has had a pair of floats attached. Tests proved that the modified Beast would require more fin area but would otherwise handle no worse than a standard Helldiver. (USN)



The need for increased fin area was met by a small ventral extension of the vertical tail, as seen here on the sole XSB2C-2, NAS Anacostia, 29 September 1942. (USN/NARS)

XSB2C-2



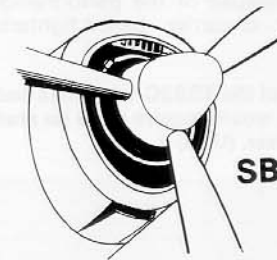
SB2C-3

Experience with the early marks of the Helldiver showed that many of its worst handling problems stemmed from it being underpowered for its weight and size. Consequently, an early SB2C-1 Mod II (BuNo 00008) was fitted with a 1900HP Wright R-2600-20 with cast aluminum cylinder heads and Wright 'W' barrel fins in the place of the standard 1700HP R-2600-8. The new engine drove a four-bladed Curtiss-Electric spinnerless prop. The effect of the increased power was totally beneficial. Top speed was increased from 281 to 294MPH and range improved marginally. This change became standard on all production 'dash-3s'. Other changes introduced at the same time, in spring 1944, included the deletion of the large windows immediately behind the pilot's seat and a redesigned rear canopy with an improved slide system. A further feature which didn't appear until late in the model run was the adoption of perforated dive brakes/flaps which finally solved the tail buffeting problem which had plagued the Beast during high-speed dives, and improved low speed handling. A limited number of late model 'dash-3s' were completed with AN/APS-4 airborne intercept radar in the place of the standard ASB sea-search set. Designated SB2C-3E, the new variant could be distinguished by the characteristic radar pod carried under the starboard wing. Since the radar pod was removable, the surest mark of a 'dash-3E' was its lack of Yagi antennae.

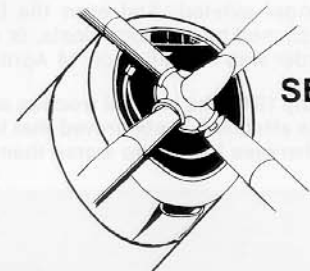
The SB2C-3 largely solved the problems which had given the Beast its bad reputation. Unfortunately, by this time, the dive bomber, as a type, was rapidly becoming obsolete. The new generation of carrier-borne fighters, particularly the F4U Corsair, could carry the same bomb load (2000Lbs) at considerably higher speed and was a superior warplane after its ordnance had been dropped.

1112 SB2C-3s were built by Curtiss (BuNo 18599-19710). Additionally, 413 SBW-3s (BuNo 21233-21645) were delivered by CC&F and 150 SBF-3s (BuNo 31686-31835) were built by Fairchild-Canada.

Propeller Development



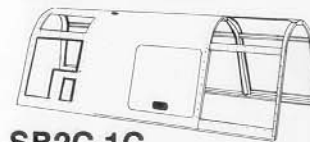
SB2C-1C



SB2C-3

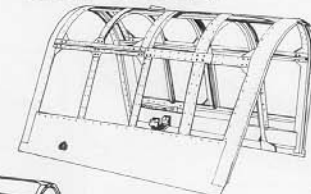
Canopy Development

Fixed Canopy

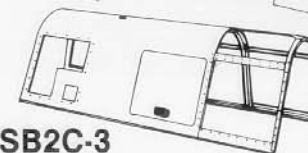


SB2C-1C

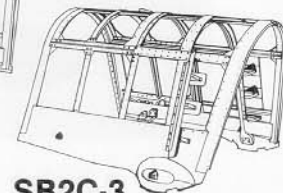
Rear Canopy



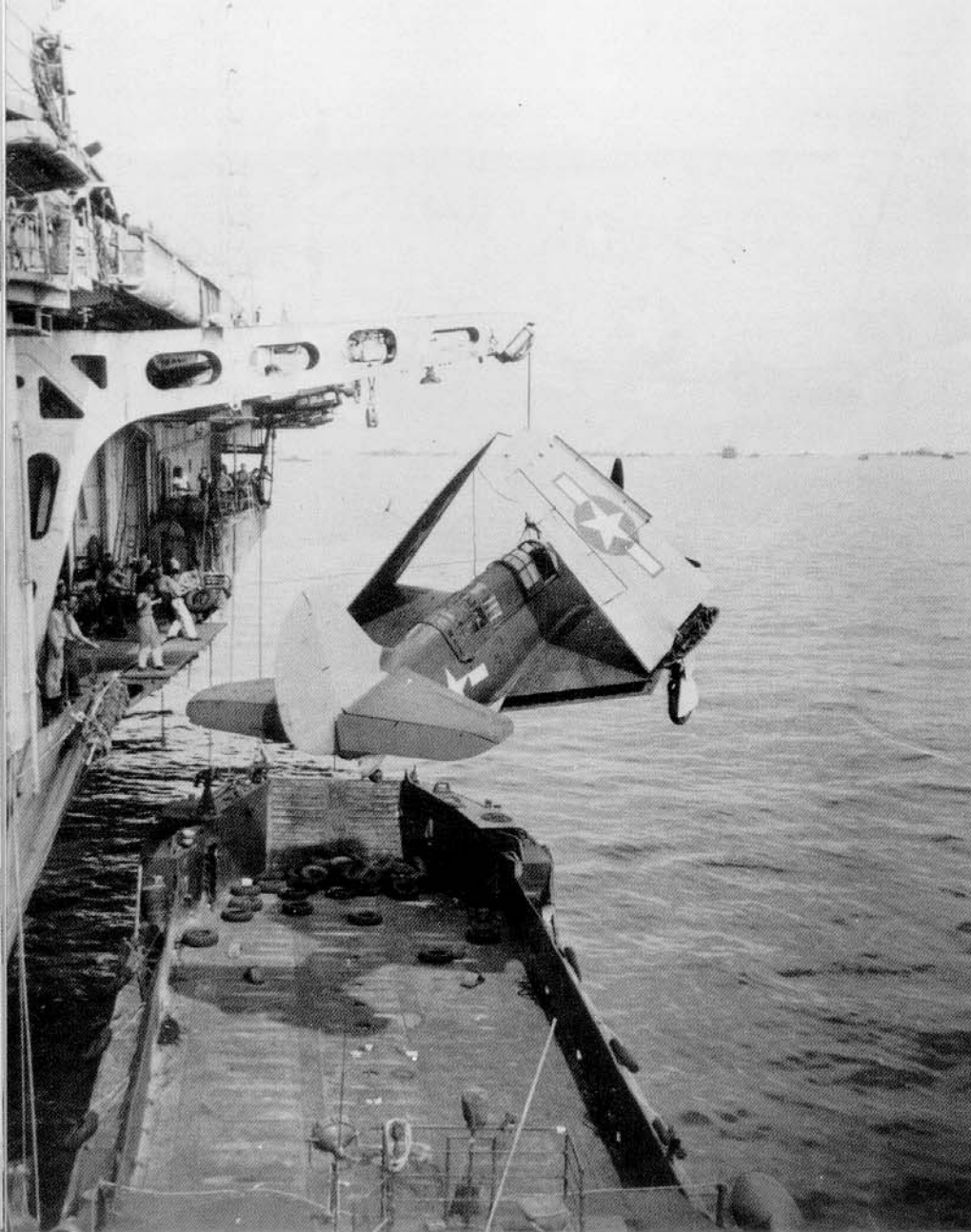
SB2C-1C



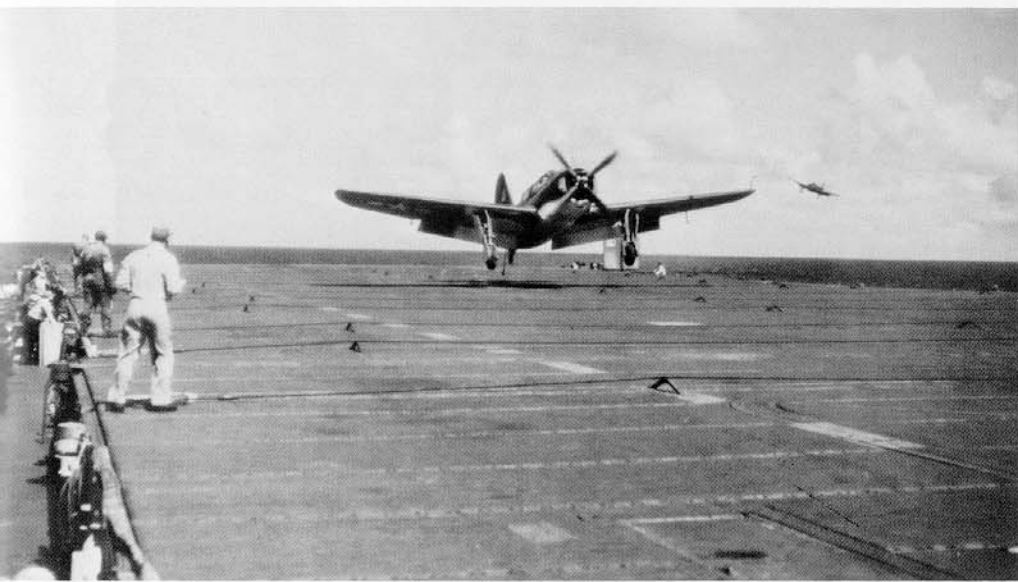
SB2C-3



SB2C-3



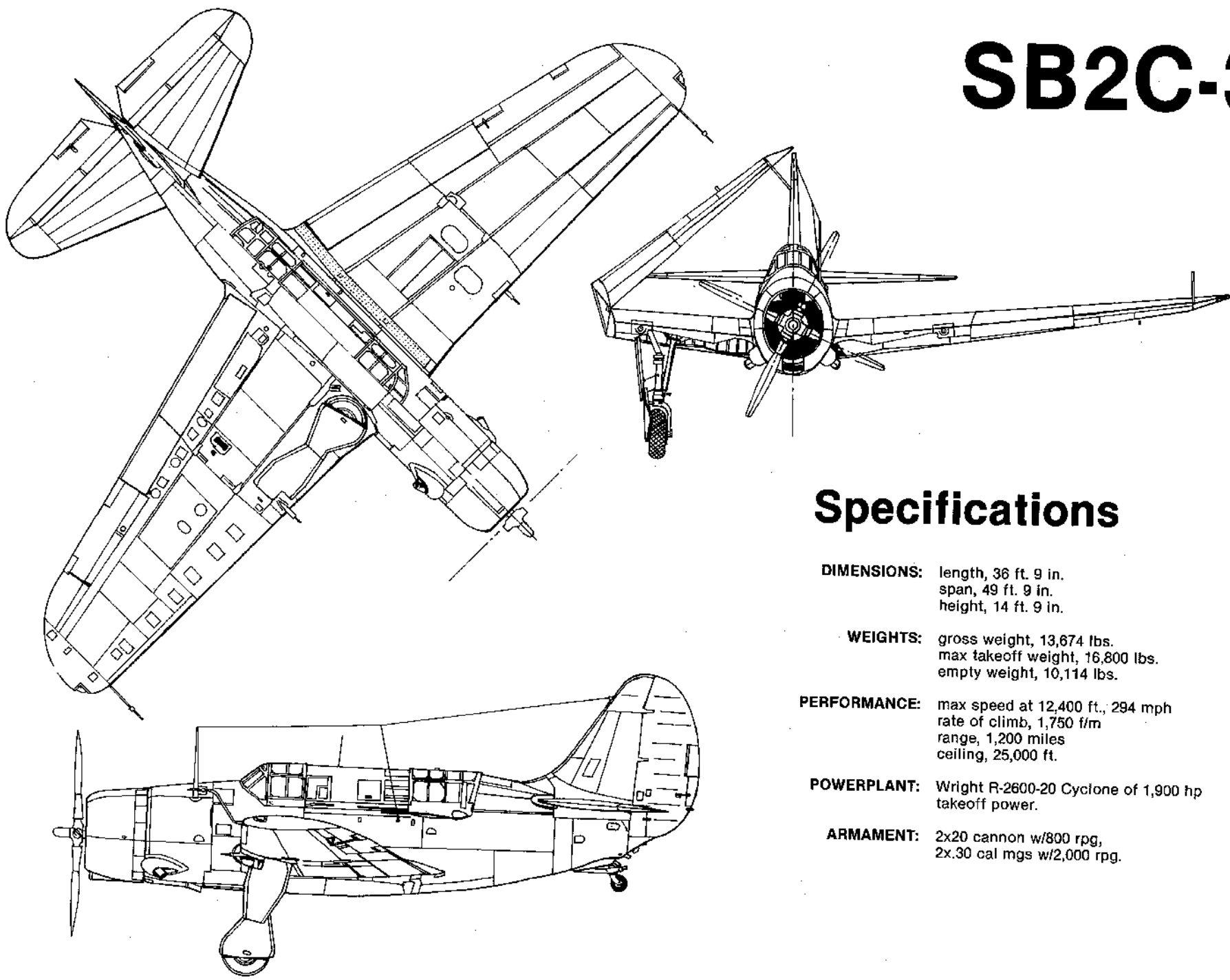
As air groups began to replace the serious losses from the Battle of the Philippine Sea, the VBs were filled with newly delivered SB2C-3s. That battle proved to be the turning point in the fleet's opinion of the Helldiver. The more potent 'dash-3' was now greeted with some enthusiasm. Here a brand-new SB2C-3 is hoisted aboard Intrepid during replenishment at Ulithi, 12 November 1944. (USN/NARS)



(Clockwise from Above) Poetry in slow motion - A Beast is recovered aboard Ticonderoga. The elapsed time is less than 15 seconds, testimony to the efficiency of US deckcrews. (NASM)



SB2C-3



Specifications

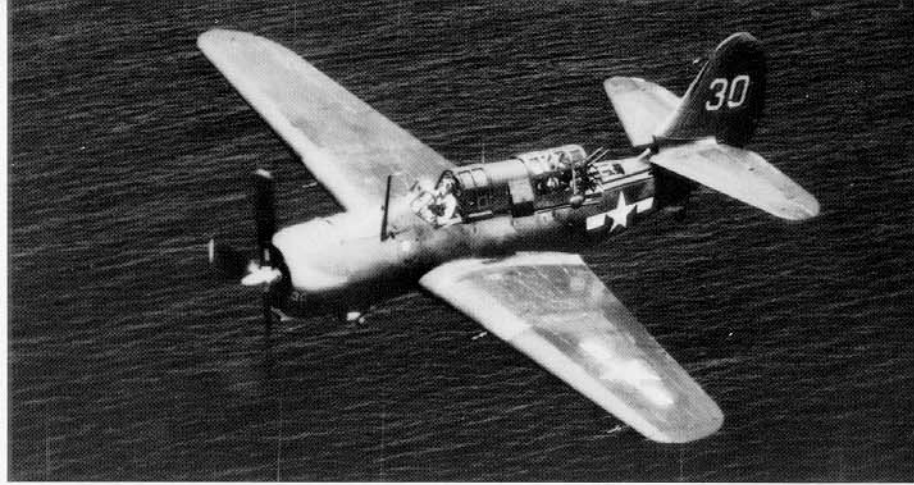
DIMENSIONS: length, 36 ft. 9 in.
span, 49 ft. 9 in.
height, 14 ft. 9 in.

WEIGHTS: gross weight, 13,674 lbs.
max takeoff weight, 16,800 lbs.
empty weight, 10,114 lbs.

PERFORMANCE: max speed at 12,400 ft., 294 mph
rate of climb, 1,750 f/m
range, 1,200 miles
ceiling, 25,000 ft.

POWERPLANT: Wright R-2600-20 Cyclone of 1,900 hp
takeoff power.

ARMAMENT: 2x20 cannon w/800 rpg,
2x.30 cal mgs w/2,000 rpg.

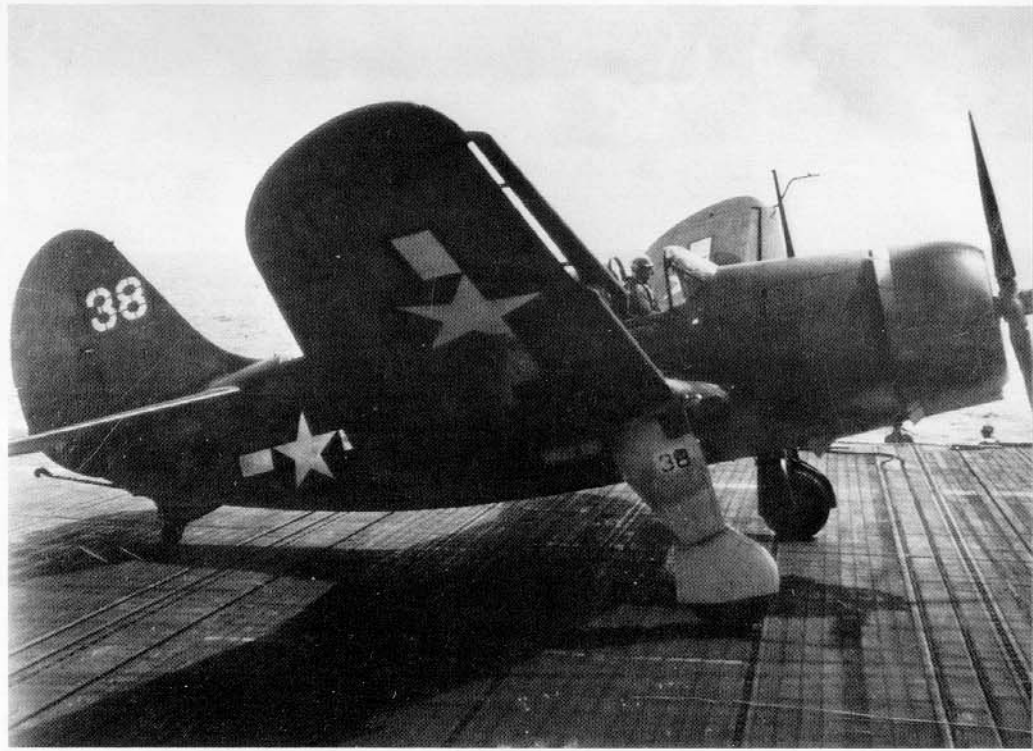


As new carriers joined the fleet in rapid succession from mid-1944 on, the lack of an 'official' program of air group marking began to cause confusion. At first the new air groups carried no distinctive markings at all. Only gradually did such distinctions evolve on a carrier-by-carrier basis. Here a very plain SB2C-3 of VB-13 is seen on Franklin, 8 July 1944. (USN via Dick Hill)

(Above Right) A typical example of how air group markings evolved in late 1944. Here, one of Ticonderoga's Helldivers is seen in early November, its only significant marking being a tail number in the '30s'. (USN/NARS)

(Below Right) Later in November, Ticonderoga's air group adopted a downward-pointing chevron and its Beasts were renumbered in the '70s'. (USN/NARS)

'75' is an SB2C-3 on Lexington, VB-19, 20 August 1944. (USN via Jim Sullivan)



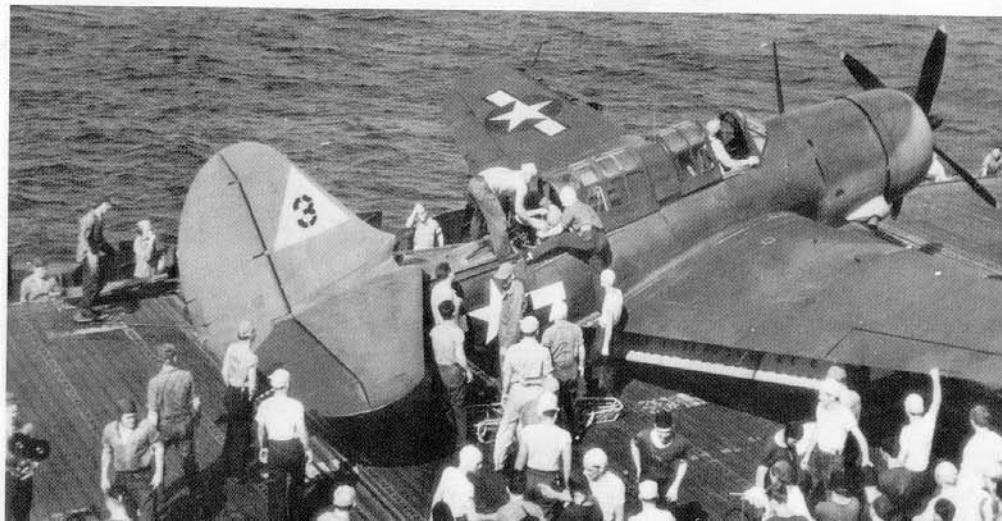


One-by-one the new air groups adopted markings. Satan's Angel, an SB2C-3 off Hancock (VB-7), displays that carrier's 'Omega' insignia, 13 October 1944. The pod under the right wing contains a pair of machine guns for added forward firepower. (USN/NARS)



(Left) Intrepid adopted a cross as its air group marking. Here, a VB-18 gunner waits for his pilot to finish his post-mission paperwork, 25 October 1944. (USN/NARS)

Enterprise gave up her SBDs with great reluctance. When CVG-20 replaced CVG-10 before the Philippines Campaign, Enterprise received her first Beasts, marked with a White triangle and Black aircraft number, 24 November 1944. (USN via Dick Hill)

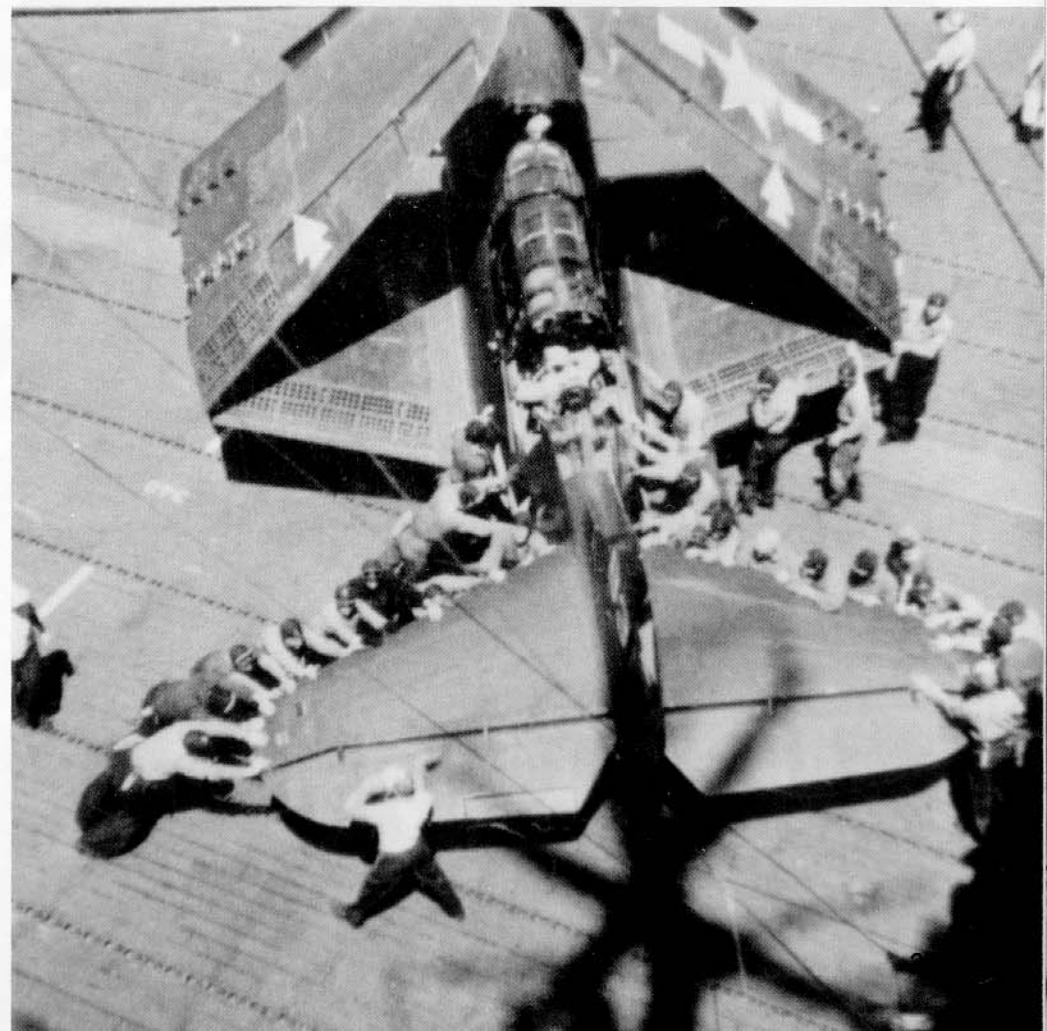




The multiplication of air groups (at the time of Leyte Gulf, Task Force 38 included 17 aircraft carriers) and the haphazard manner in which markings originated caused confusion and led to standardization. On 27 January 1945, COMAIRPAC issued a set of White tail and wingtip markings for the 27 fleet and light carriers in the Pacific. A wide, rising band marks this SB2C-3 of VB-9 off Lexington, February 1945. Note the similar band on the right wingtip. (USN/NARS)

(Right) Hancock's marking was a descending stripe, also repeated on the wingtip, VB-6, 19 February 1945. (USN/NARS)

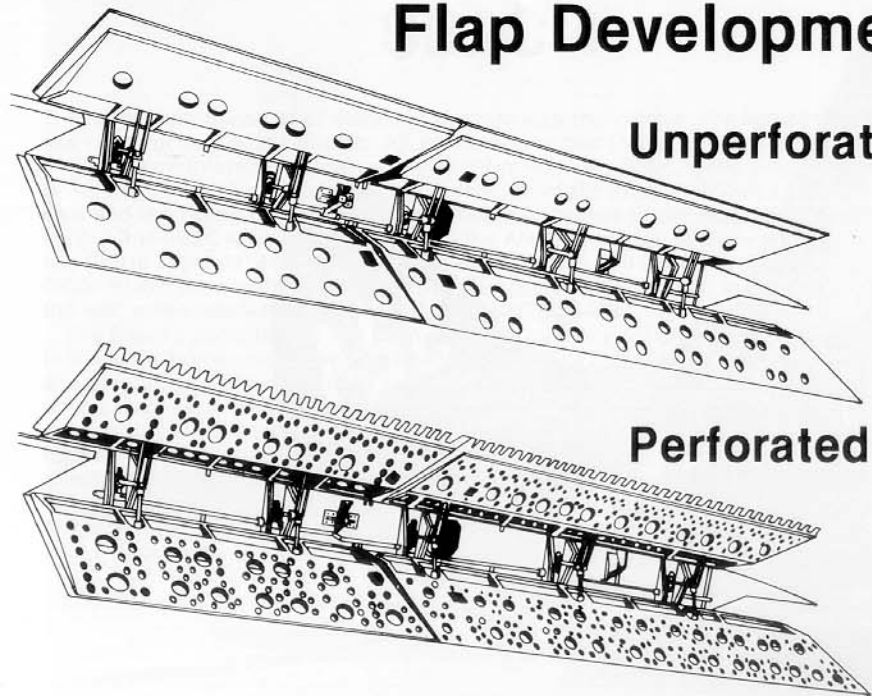
Note the perforated flaps on this late SB2C-3E. The lack of Yagi antenna marks the 'E' variant. Note also the new overall Glossy Sea Blue camouflage. The 'pinetree' marking on both ailerons indicate Bennington's air group, VB-82, February 1945. (USN/NARS)

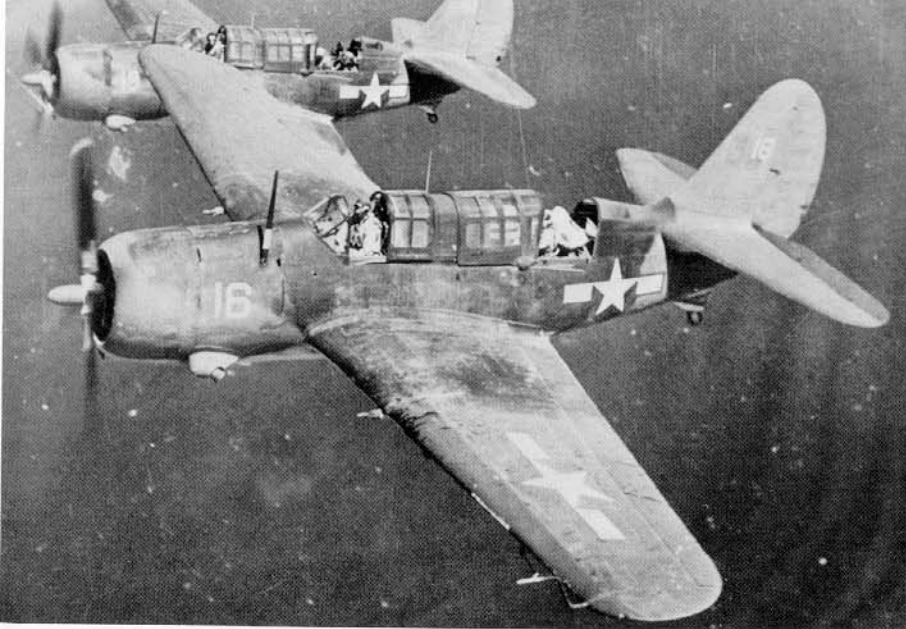


Flap Development

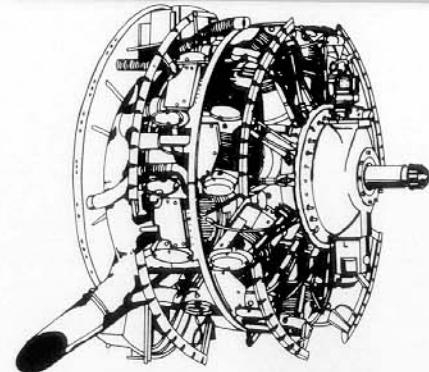
Unperforated

Perforated





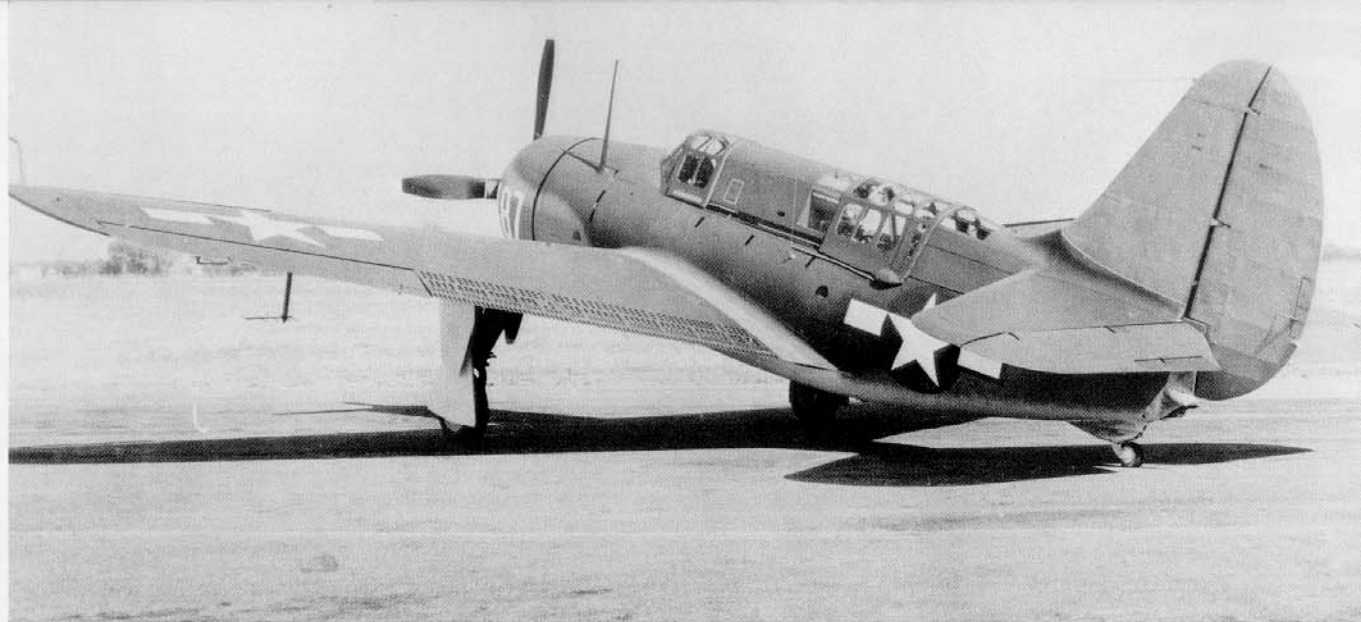
Wright R-2600-20 Cyclone



The Marines received most of the USAAF's castoff A-25As, but these all remained stateside in non-combat roles. In 1944, they received newer Beasts which were rapidly deployed in the Pacific. Here, two SB2C-3s of VMSB-343, Gregory's Gorillas, patrol near Midway during late 1944. This unit had the dubious distinction of suffering the last operational losses of Helldivers in US markings when six of its Beasts went down in a snowstorm over Tientsin, China, on 8 December 1945. (USMC via Jim Sullivan)

A great many SB2C-3s survived to take on training duties in the immediate postwar period. Here an SBW-3, built by CC&F, is seen at Morrison Field, FL, in 1946. The removal of the lower gear door was common on land-based Helldivers. (Hal Andrews via Jim Sullivan)





The perforated flaps introduced during the middle of the 'dash-3' production run became standard on the SB2C-4. The small windows aft of the pilot have been deleted. Though not visible here, rocket rails have also become standard. (NASM)

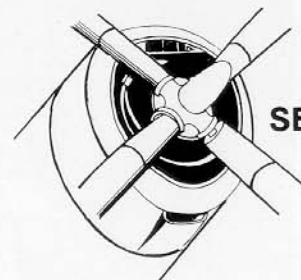
A bit of aviation cheesecake (or, forgive the pun - Beauty and the Beast)! This attractive young lady points out one of the SB2C-4's distinctive features, the spinner on its four-bladed prop. (NASM)

SB2C-4

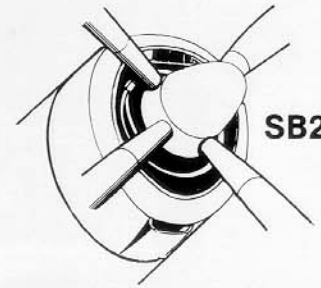
The most produced of all Helldiver variants was the 'dash-4', the last of the Beasts to see major action in the Pacific. All of the alterations included in late 'dash-3s', in particular the perforated dive brakes, were continued in the SB2C-4, the only visible changes being the fitting of a prop spinner, the deletion of the small windows behind the pilot's seat and the fitting of four zero-length rocket launchers under each wing. An air search variant, the SB2C-4E, was produced with the AN/APS-4 radar. 2045 were delivered by Curtiss (BuNo 21646-21741 & 64993-65286 & 82858-83127), 270 SBW-4Es (BuNo 21646-21741 & 60036-60209) were built, as were 100 SBF-4Es (BuNo 31836-31935). In reserve service after the war, some 'dash-4Es' were redesignated NSB2C-4Es.

The Beast's performance has been maligned by many critics, frequently without regard to the facts. Some comparisons are enlightening. The 'dash-4' had a higher cruising speed and greater range (without drop tanks) than the Avenger, and a significantly higher top speed. It easily outperformed the SBD-3 in every category except range. Its cruising speed was only two mph slower than the Hellcat's. Only the Corsair, among contemporary carrier-based aircraft, had significantly superior speed. The Corsair could carry the same load as a Helldiver but over a much shorter range. It is significant to note that when the Navy combined its torpedo and bombing squadrons into attack squadrons, beginning in 1946, Helldivers were the standard equipment. Its short postwar, first-line service was due to the excellence of the AD Skyraider (an aircraft designed **without** the size restrictions placed on the Helldiver) rather than any lack on its part. Of aircraft designed in the same, immediate pre-war period, only the Corsair outlasted it in front-line Navy service.

Propeller Development

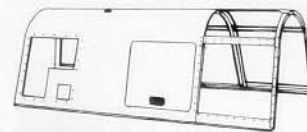


SB2C-3

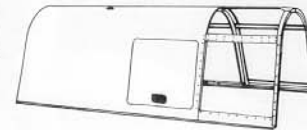


SB2C-4

Canopy Development

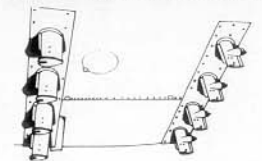


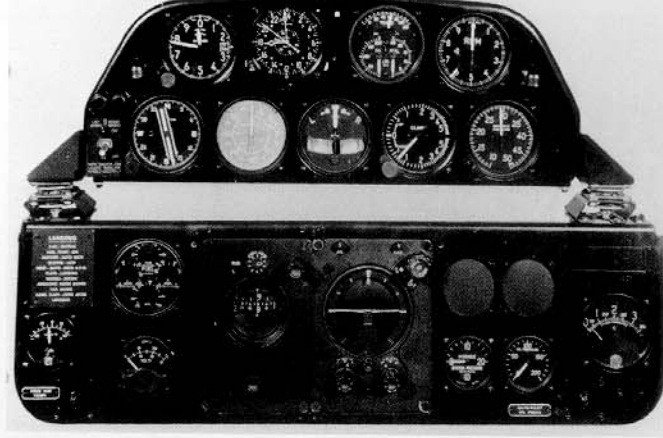
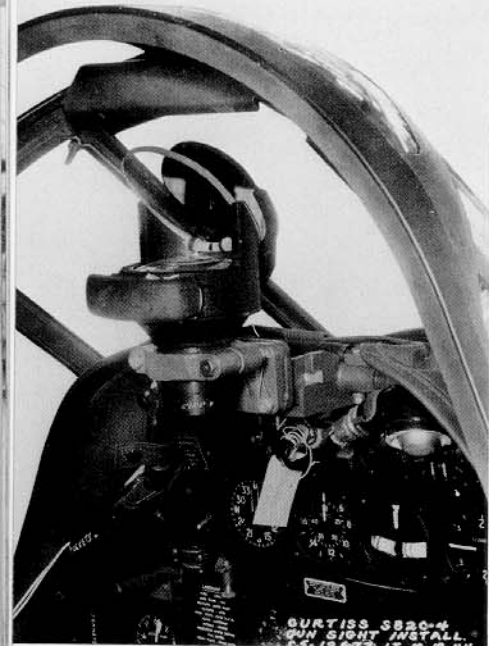
SB2C-3



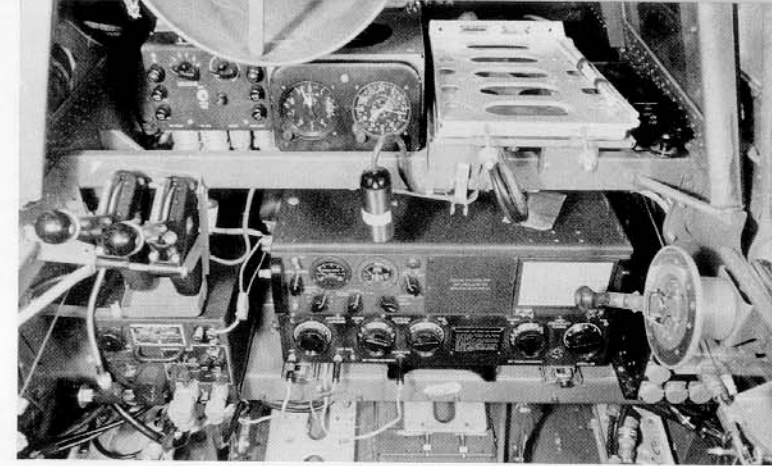
SB2C-4

Zero-Length Rocket Launchers

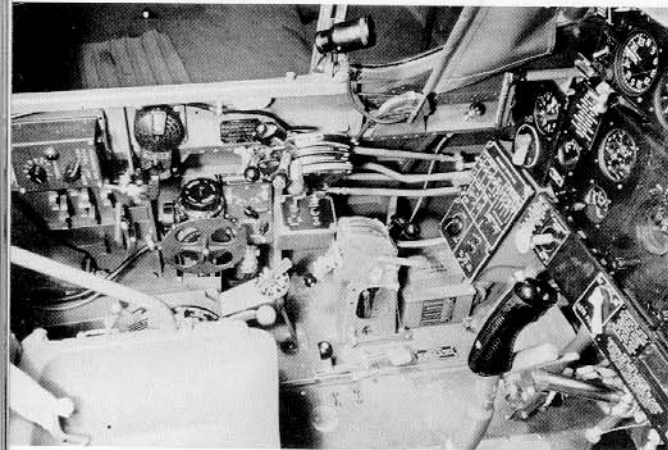




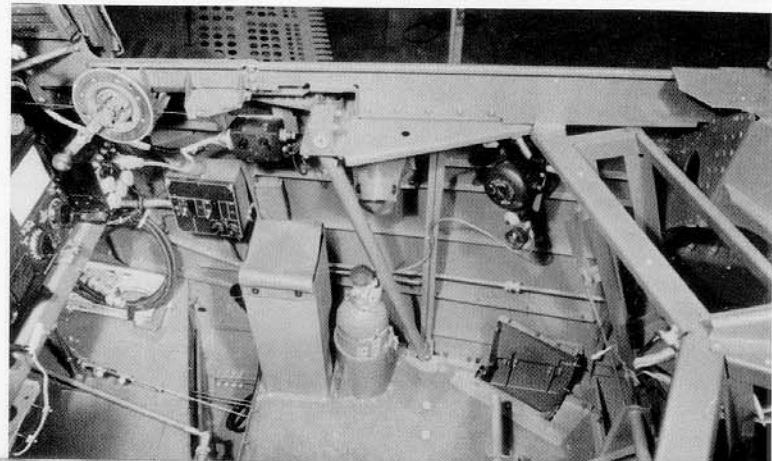
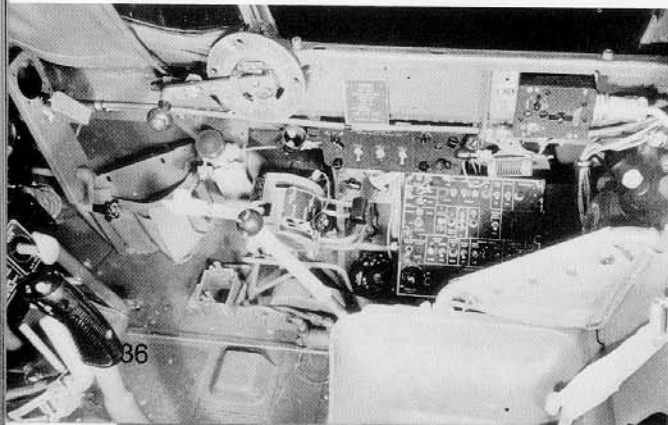
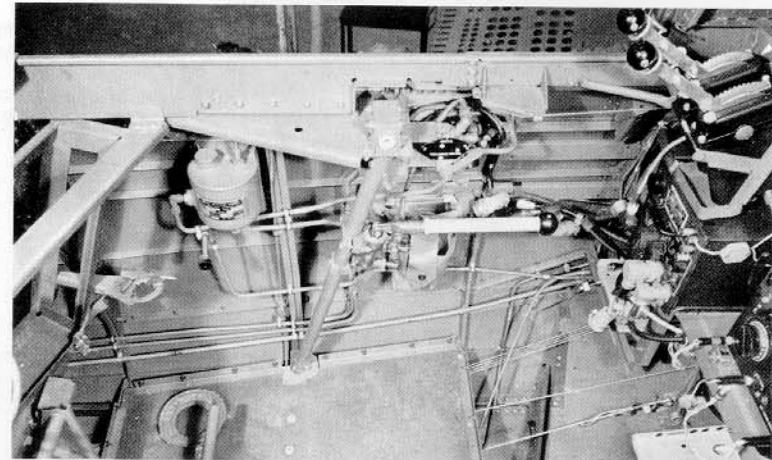
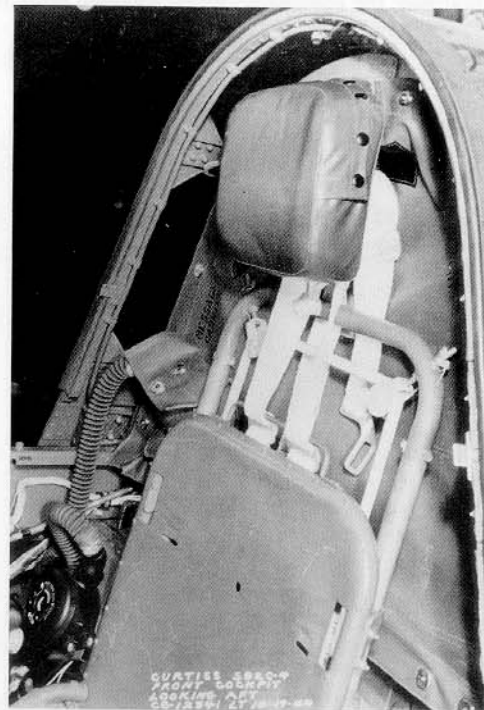
The pilot's cockpit of an SB2C-4. (Above) The instrument panel, a rather simple affair when seen by itself. (Left) A view of the panel in position with the gunsight installed. The reflex sight doubled as a bomb sight. (Below Left) The left side of the cockpit. On this side are the throttle, rudder and elevator trim controls, weapons select and arm switches and bomb release. (Bottom Left) The cockpit's right side. Here are the flap controls, fusebox and brake handle. The large handle in front of the stick is the wing fold actuator.



Details of the gunner/radio operator's position, seen with the machine gun mount removed. (Above) Looking forward. Unfortunately, this is a wartime view and the APS-4 radar receiver, a highly classified item at that time, has been removed from its normal position on the upper rack. (Below) The rear cockpit's left side. (Bottom) The rear cockpit's right side. (USN/NARS)



(Below) Pilot's seatback and headrest. (USN/NARS)

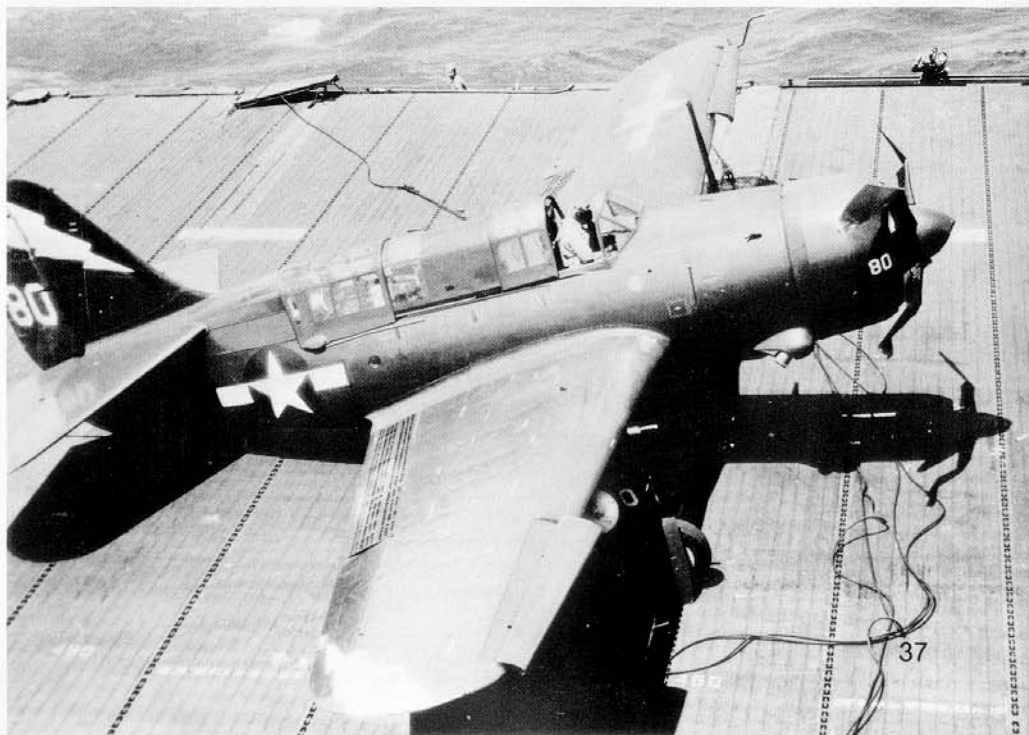




A recently delivered SB2C-4 in the now standardized markings of Yorktown's VB-3, February 1945. Note that the aircraft number has been repeated on the wing leading edge, and the canopy center section window appears to have been damaged and repaired. (USN via Jim Sullivan)

(Right) Another barrier crash, another bent prop, Shangri-La, VB-99, March 1945. (USN via Jim Sullivan)

Wings folding, this SB2C-4 of Essex's VB-83 taxis to the deck-edge elevator, 1 April 1945. (USN via Dick Hill)





(Left) Bunker Hill, Mitscher's flagship off Okinawa, took several kamikazes on 11 May 1945. Over 300 died before the fires were brought under control. One of VB-84's Beasts is seen here wrapped in smoke. The air group's upward-pointing arrow insignia can be readily seen. Less visible are the yellow cowling and spinner carried by Bunker Hill's aircraft at this time. (USN/NARS)

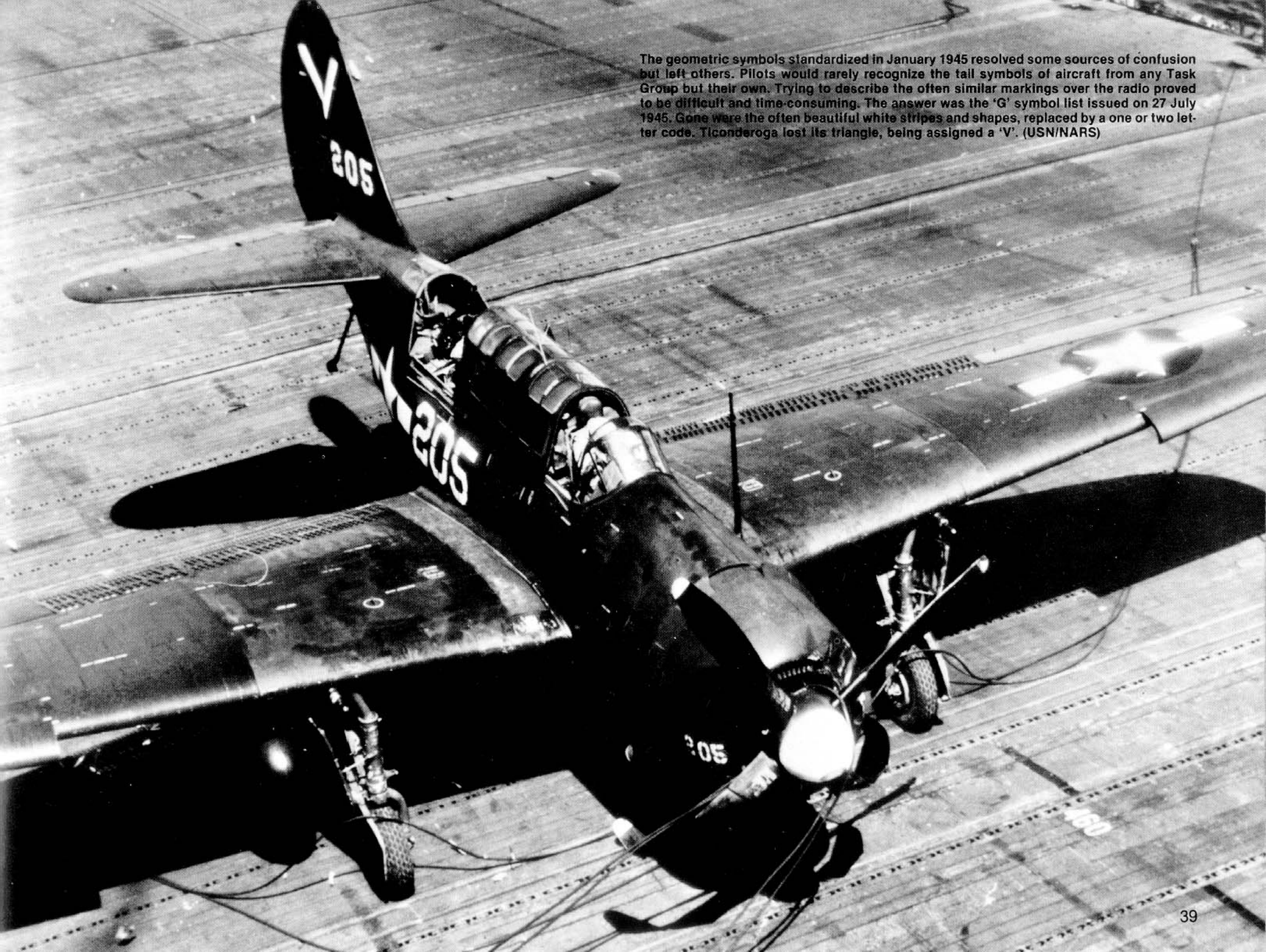


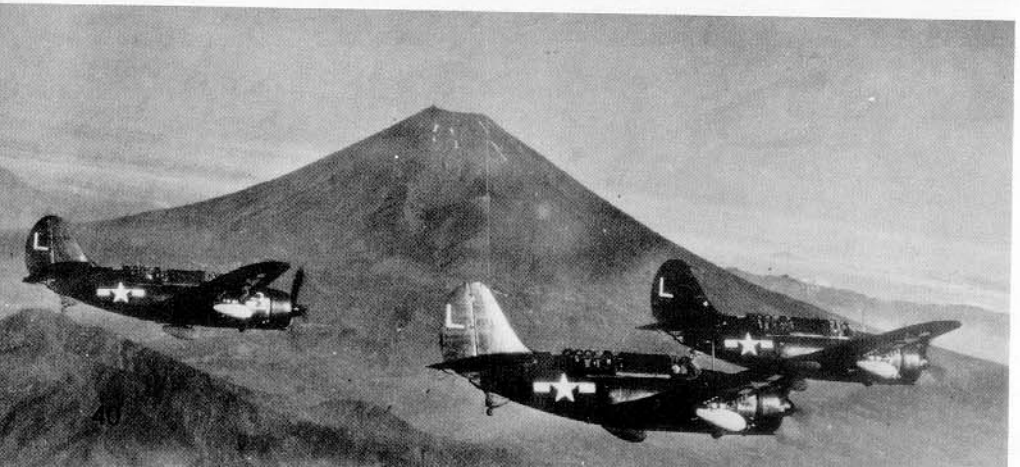
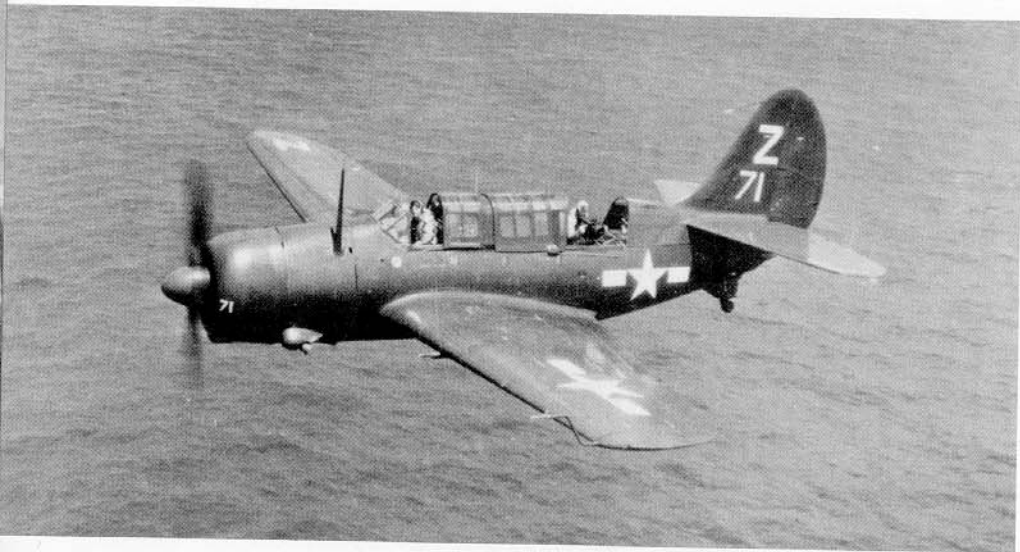
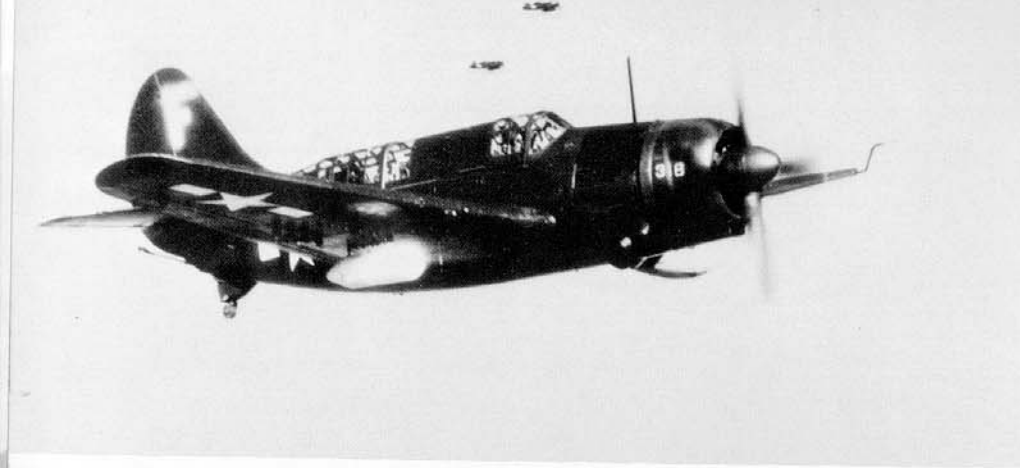
By mid-1945, the Glossy Sea Blue scheme had entirely replaced the earlier three-tone. An SB2C-4 of Ticonderoga's VB-87 meets a wet end, 6 June 1945. (USN via Dick Hill)

Five of Randolph's 'dash-4s' line up for takeoff, July 1945. These VB-16 Beasts, like most aircraft repainted Glossy Sea Blue after having originally been three-tone, retained a strip of Non-Specular Sea Blue in front of the cockpit which acted as an anti-glare panel. (USN via Dick Hill)



The geometric symbols standardized in January 1945 resolved some sources of confusion but left others. Pilots would rarely recognize the tail symbols of aircraft from any Task Group but their own. Trying to describe the often similar markings over the radio proved to be difficult and time-consuming. The answer was the 'G' symbol list issued on 27 July 1945. Gone were the often beautiful white stripes and shapes, replaced by a one or two letter code. Ticonderoga lost its triangle, being assigned a 'V'. (USN/NARS)



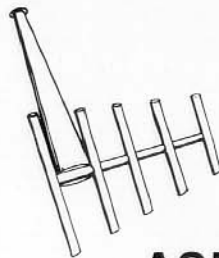


The switchover to the 'G' symbols was inconsistent. Some air groups adopted the markings almost immediately, others not at all. Here a pair of Helldivers off Yorktown ('RR'), in front an SB2C-4E with radar pod, behind an SB2C-4 with drop tank outboard. (USN via Jim Sullivan)

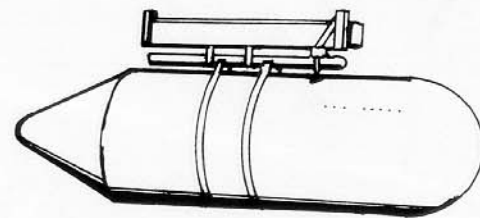
(Above Left) A late SB2C-4E off Essex ('F') is seen with extended tailhook, radar pod and drop tank. (USN via Jim Sullivan)

(Left) Shangri-La lost its thunderbolt marking and got a 'Z' in its place. Note the letter repeated on the right wing. (USN/NARS)

Radars



ASB



AN/APS-4

A trio of Randolph's ('L') Beasts, all with a pair of drop tanks, pose in front of Fujiyama, a popular tourist attraction for carrier pilots in July 1945. (USN via Dick Hill)

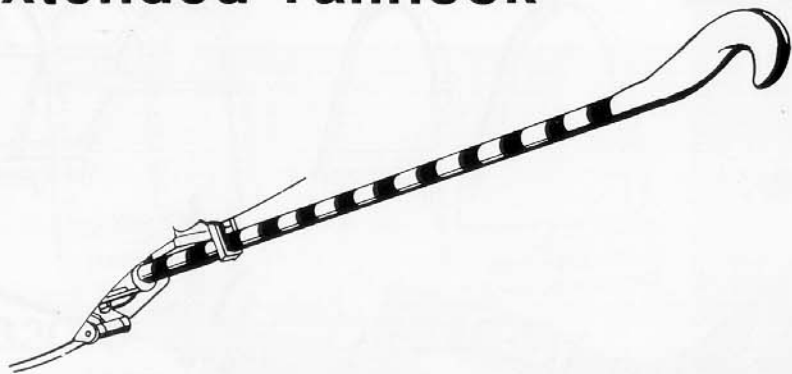


The Bombing Banshees of VMSB-244 were the first Marine unit to take Helldivers into combat when they attacked Cabaguio, Mindinao, on 2 June 1945. A pair of Banshees SB2C-4s are seen 10 days later. (USMC)



Numerous SB2C-4s survived into the postwar period. A line-up of SB2C-4Es are seen here, probably at NAS Atlantic City. The pair in front are still in a faded Dark Gull Gray and White Atlantic scheme known as ASW Scheme II. The third in line belongs to VB-74. (NASM)

Extended Tailhook



A trio of SB2C-4Es are seen at Camp Kearny, CA, late 1945. (via Jim Sullivan)





Helldivers rapidly replaced Avengers in the fleet's VTs at war's end. This is an SBF-4E of VT-75. The rudder has been replaced on this Beast. Its Red tail band had previously extended across the rudder, carrying the squadron number in White. VT-75 was assigned to FDR at this time. On 15 November 1946, the Navy's VBs and VTs were redesignated VAs as part of a general reorganization. (Hal Andrews via Jim Sullivan)

(Upper Left) A gorgeous, overall Chrome Yellow Beast carries the markings of the Naval Air Maintenance Unit, Johnsville, PA. (NASM)

(Lower Left) This SB2C-4E is from an unidentified reserve unit, probably from Pennsylvania, judging from the keystone in the insignia. The Orange band and lack of fuselage roundel identified reserve units in the immediate postwar period. (USN via Jim Sullivan)



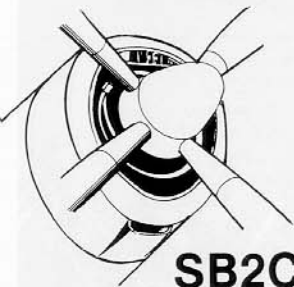
This SBW-4E looks rather forlorn sitting on the grass at NAS Cleveland, 1946. The 'Y' might indicate that it last flew off Bunker Hill, or it might signify something else entirely. Any semblance of consistent aircraft markings disappeared at war's end, not to reappear until 1947. (NASM)



SB2C-5

The last production variant of the Helldiver was distinguished primarily by increased fuel capacity, 35 gal. more being carried internally. External differences from the 'dash-4' were minor. They included a frameless sliding canopy for the pilot, a spinnerless, four-bladed, paddle-bladed prop, the fixing of the tailhook in extended position and the deletion of the ASB radar. Any SB2C-S could be fitted with the AN/APS-4 radar set. Production began in February 1945, but few 'dash-5s' reached active squadrons before war's end. There were three XSB2C-5s, two modified from 'dash-4s' (BuNo 65286 & 83127) and one former 'dash-1C' (BuNo 18308). 970 SB2C-5s (BuNo 83128-83751 & 89120-89465) were completed, with a further 2500 being cancelled. (Obviously, the Navy didn't like the Helldiver!) Only CC&F built 'dash-5s' in Canada, 85 (BuNo 60211-60295) being delivered as SBW-5s. A further 165 were cancelled at war's end.

Propeller Development

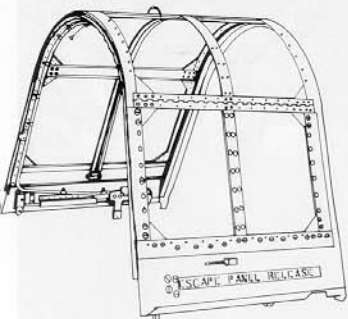


SB2C-4

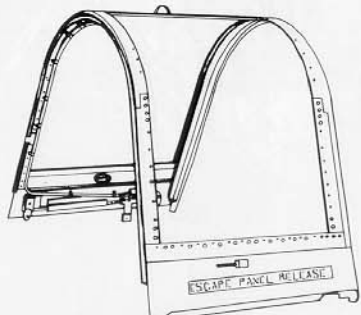


SB2C-5

Canopy Development



SB2C-4

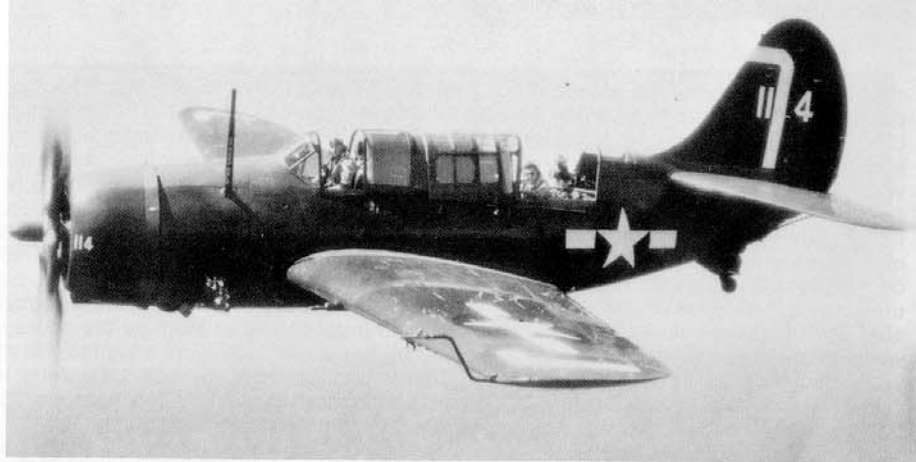


SB2C-5

A new SB2C-5 in factory markings. The large numbers at the nose are the last three digits of the aircraft's Bureau Number, making this BuNo 83520. The numerous White stencils would have been over-painted before the aircraft saw combat. The antiglare panel and wingwalk were painted flat black.(C-W)

The SB2C-5 became the standard post-war dive bomber in the Navy's VBs, though it didn't last long in front-line service. By 1950 it had been entirely phased out of active duty, being relegated to training or research tasks. It didn't last too much longer in reserve squadrons. By the mid-'50s, Helldivers had disappeared from Navy inventory, but its service was far from over. Five other nations, France, Italy, Greece, Portugal and Thailand, flew SB2C-5s as part of the MDAP program. Helldivers saw action in the service of three of those countries. The Greeks used about 20 SB2C-5s of the 336 Communists insurgents until they were replaced by F-84Gs in 1953. The Thais and French both flew Helldivers over Indochina until 1955. The most famous action in which they flew was the heroic but unsuccessful defense of DienBienPhu in 1954. The Helldivers of Esc. 3F from Arrormanches endeared themselves to the Legionnaires who fought the Viet Minh by the courage with which they supported the ground troops. The last active Helldivers were the Italian, which operated as anti-submarine patrol aircraft until replaced by S2F-1 Trackers in 1956-7. The last Italian S2C-5 (the B was dropped from the designation because the Italians weren't allowed bombers by treaty) was finally deleted on 26 February 1959.





Only a limited number of SB2C-5s reached combat units before the end of the war. '114' off Lake Champlain is seen on 23 June 1945. (USN via Dick Hill)

Antietam's VB-89 operated SB2C-5s through war's end, never adopting its authorized 'G' symbol (which should have been 'W'), retaining its stripes. (USN via Jim Sullivan)





SB2C-5s were assigned to a great variety of shore-based units as the Navy attempted to cut down on the number of types it operated postwar. An SB2C-5 of VB-153 is seen in October 1946 over San Francisco Bay. (Art Whittaker via Jim Sullivan)

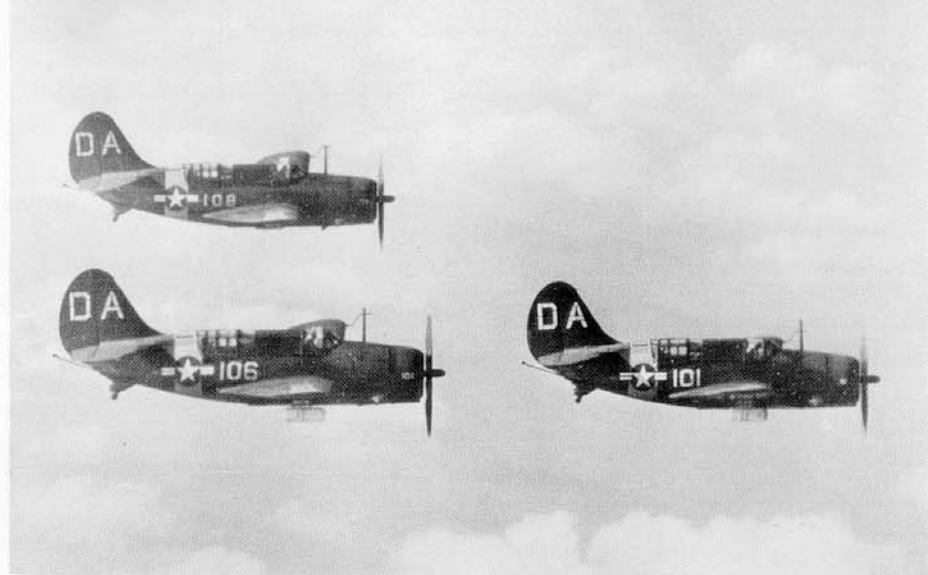
(Right) A Yellow-cowled Beast is towed past a bus stop at NAS Corpus Christi, 1946. All SB2C-S's were essentially 'E' models, carrying no radar unless the AN/APS-4 was optionally fitted, as here. (via Jim Sullivan)

Helldivers also became testbeds. An immaculately maintained SB2C-5 is seen on the flight line at NATC Patuxent River, 1945. The spinner is non-standard. (USN via Jim Sullivan)





(Above) As the fleet reorganized in 1946 to meet the new threats of the Cold War, its squadrons were reshuffled and renamed several times before they emerged as the air groups of 1947 composed mainly of VFs and VAs. The former were equipped with Corsairs and Bearcats, the latter with Helldivers. This state of affairs was only temporary, though. Within a year the first jets began entering VF service, while new Skyraiders and displaced Corsairs took over attack duties. By 1950 and the beginning of the Korean War, Helldivers were no longer in front-line duty with the fleet. From January 1947, tailcodes were assigned to air groups rather than to carriers. After a bit of a mishap, this SB2C-5 from CVG-15, then assigned to Antietam, ended upside down in the sawgrass on Saipan, January 1947. (Art Whittaker via Jim Sullivan)



The Helldiver's last duty in the US Navy was with the reserves. This trio of SB2C-5s were based at NAS Dallas. (Capt. Walter E. Ohlrich, Jr.)

Tailcoded 'UA', this SB2C-5 flew out of NAS St. Louis. The 1947 tailcode system for reserve aircraft was a two-letter code. The first letter indicated the base ('U' - St. Louis), the second indicated function ('A' - attack). (USN via Jim Sullivan)

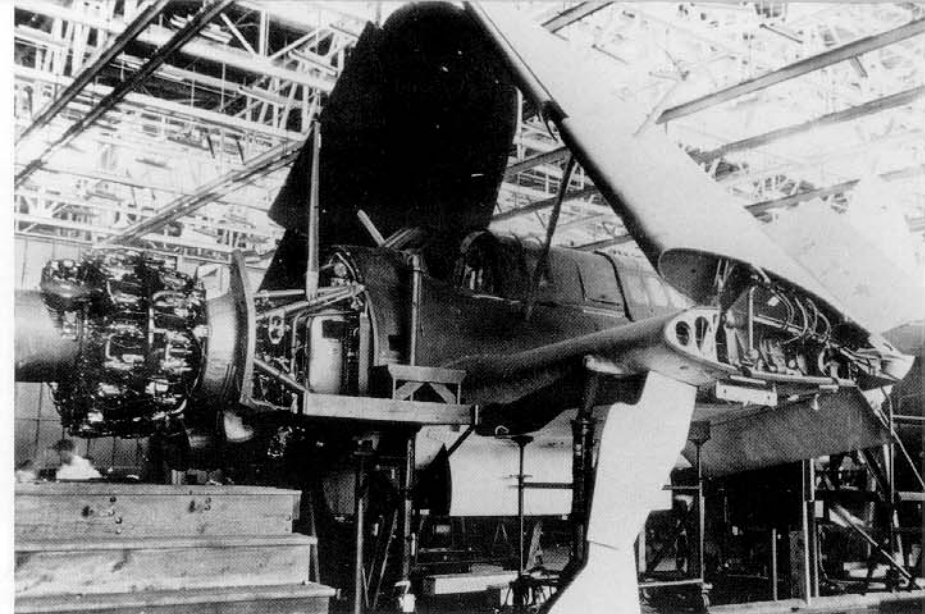




(Above) A number of nations received surplus Helldivers under the MDAP program. The French were probably the last to fly Beasts in combat. Esc 3F flew support for the beleaguered Legionnaires at DienBienPhu, 1954. '3.F-14' drops supplies after that garrison was surrounded. (Aeronavale via CPO L.F. LeGuellec)



(Left) '3.F-15' ready to launch off Arromanches, Gulf of Tonkin, 1954. (Aeronavale via CPO L.F. LeGuellec)



The massive 2100hp R-2600-22 installed in one of the two XSB2C-6s. The increased horsepower was intended to further improve the Beast's performance and handling. (NASM)

(Right:Top, Center, Bottom) The elongated, tapering nose, with its characteristic flattened top, identify the XSB2C-6s, 27 August 1944. (USN/NARS)



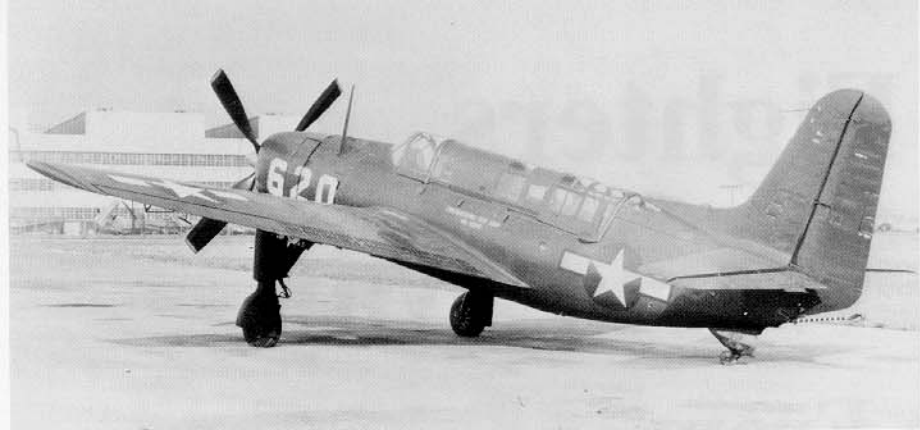
XSB2C-6

Two prototypes of the final planned variant of the SB2C were built under the designation XSB2C-6. A pair of 'dash-1Cs' (BuNo 18620-1) were fitted with the 2100HP Wright R-2600-22 and a redesigned cowling featuring a pair of bulges housing airscoops at the upper corners. Performance was improved significantly over the 'dash-5', but no production was ordered since the war's end was in sight. After the decision to not mass produce this variant, the two prototypes were used as testbeds for various design schemes. The first had its vertical tail extended in height and narrowed in chord and a dorsal fin added, as well as new horizontal tail surfaces similarly narrowed and lengthened. The wing tips were also revised on this prototype.

XSB3C-1

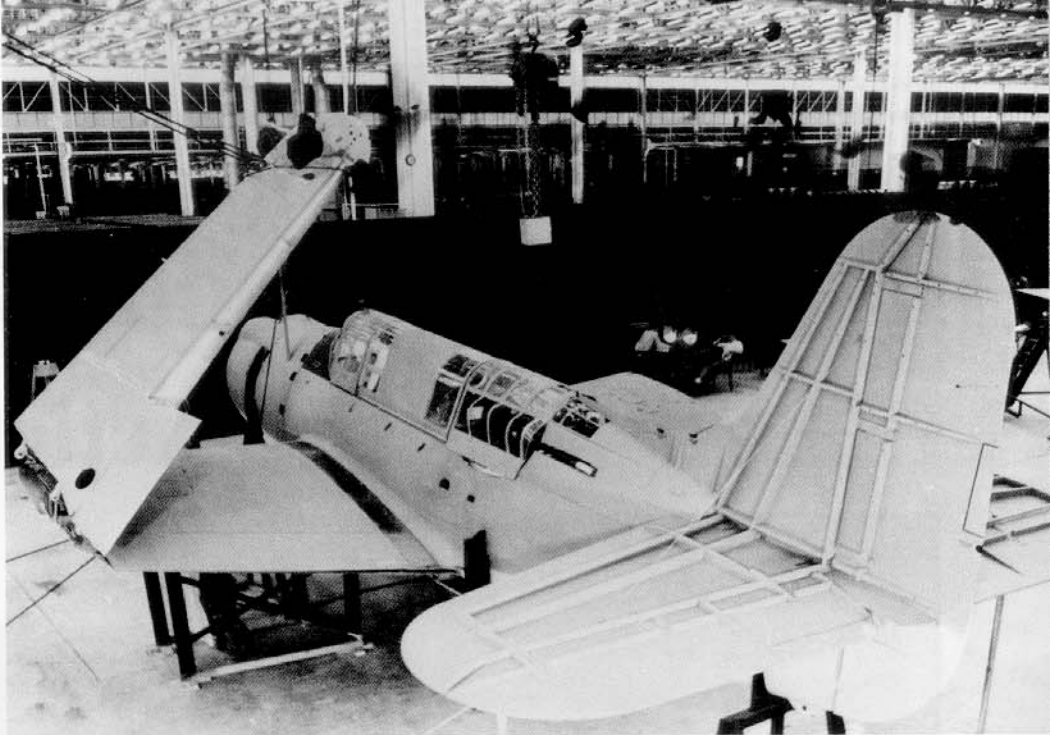
A mock-up was built of an entirely new aircraft intended to replace the Helldiver on Curtiss' lines, when the latter ran into its development troubles early in the program. Power was to have been further increased with a 2300HP R-3350-8 and a nose wheel and turret were to have been standard, but the Navy decided to fix the existing Beast rather than try a new one and the XSB3C-1 never advanced beyond the mock-up stage. USAAF intended to acquire some of the '3C' even after the Navy decided to cancel, and the mock-up briefly carried the designation XA-40-CS before the Army also decided to drop the project.



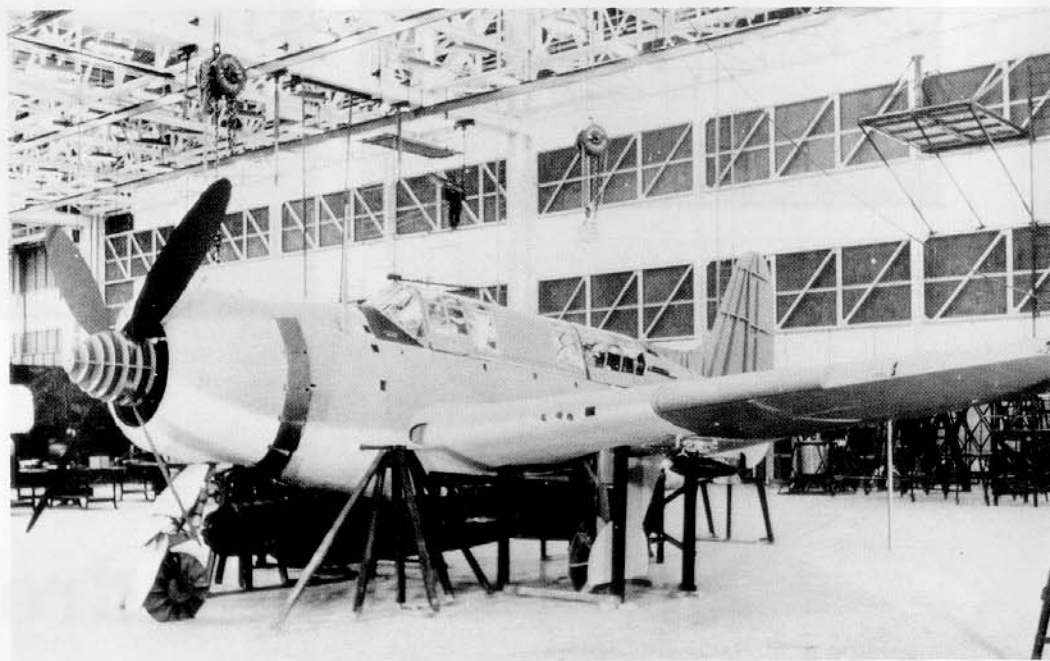
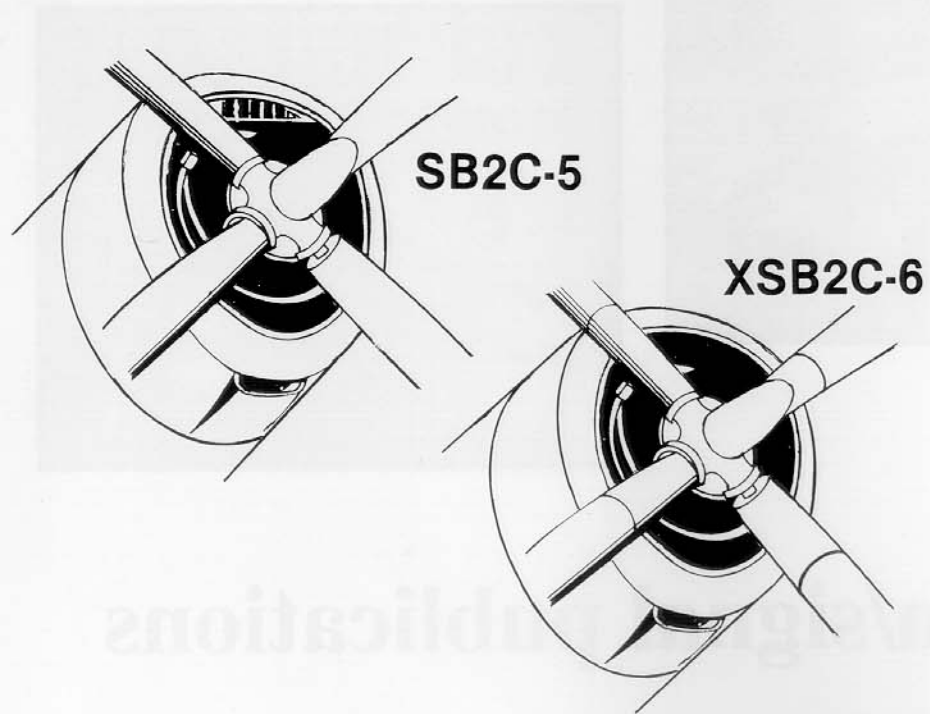


The first XSB2C-6 (BuNo 18620) was modified to test some of the features of the never-built XSB3C. In particular, note the taller tail and blunter wingtips, Columbus, 20 September 1945. (Art Whittaker via Jim Sullivan)

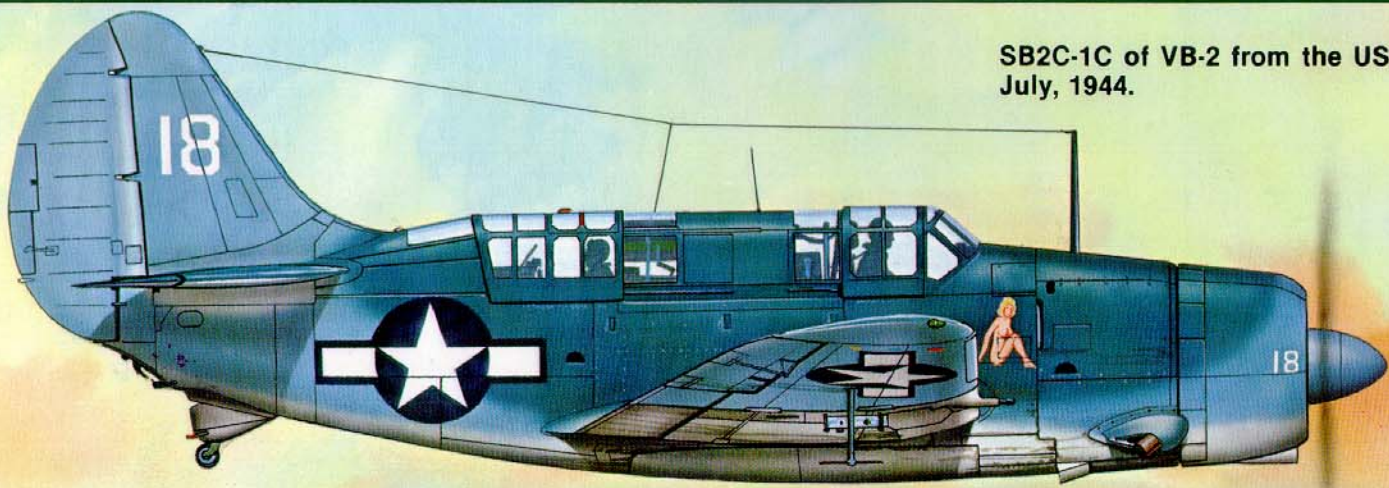
The XSB3C progressed no further than this mock-up seen on 15 December 1941. It would have been able to carry two torpedoes or 4000lbs of bombs and would have been the Navy's first carrier aircraft with a tricycle landing gear. (USN/NARS)



Nose Development



SB2C-1C of VB-2 from the USS Hornet on 3 July, 1944.



SB2C-4E in Naval Reserve markings from 1947.



DON GREEN