OSPREY COMBAT AIRCRAFT • 20

TBD DEVASTATOR UNITS OF THE US NAVY

Barrett Tillman

BARRETT TILLMAN is known to most aircraft enthusiasts across the globe as 'Mr Naval Aviation'. He has devoted his life to recording the exploits of US naval aviators in combat, and charting the histories of the aircraft types that they flew.

A native of Oregon, where he learned to fly as a teenager, Tillman has written 25 books (including four novels) and had more than 450 articles published in such august periodicals as *The Hook* and *Flight Journal*.

His devotion to detail and original research has seen him awarded prizes by the American Aviation Historical Society and the US Air Force Historical Foundation.

This particular volume on the Douglas Devastator is Tillman's sixth book for Osprey since 1995, with his previous books on Wildcat and Hellcat aces, and the Helldiver, Dauntless and Avenger, all reprinting at least once.

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OF THE US NAVY

SERIES EDITOR: TONY HOLMES

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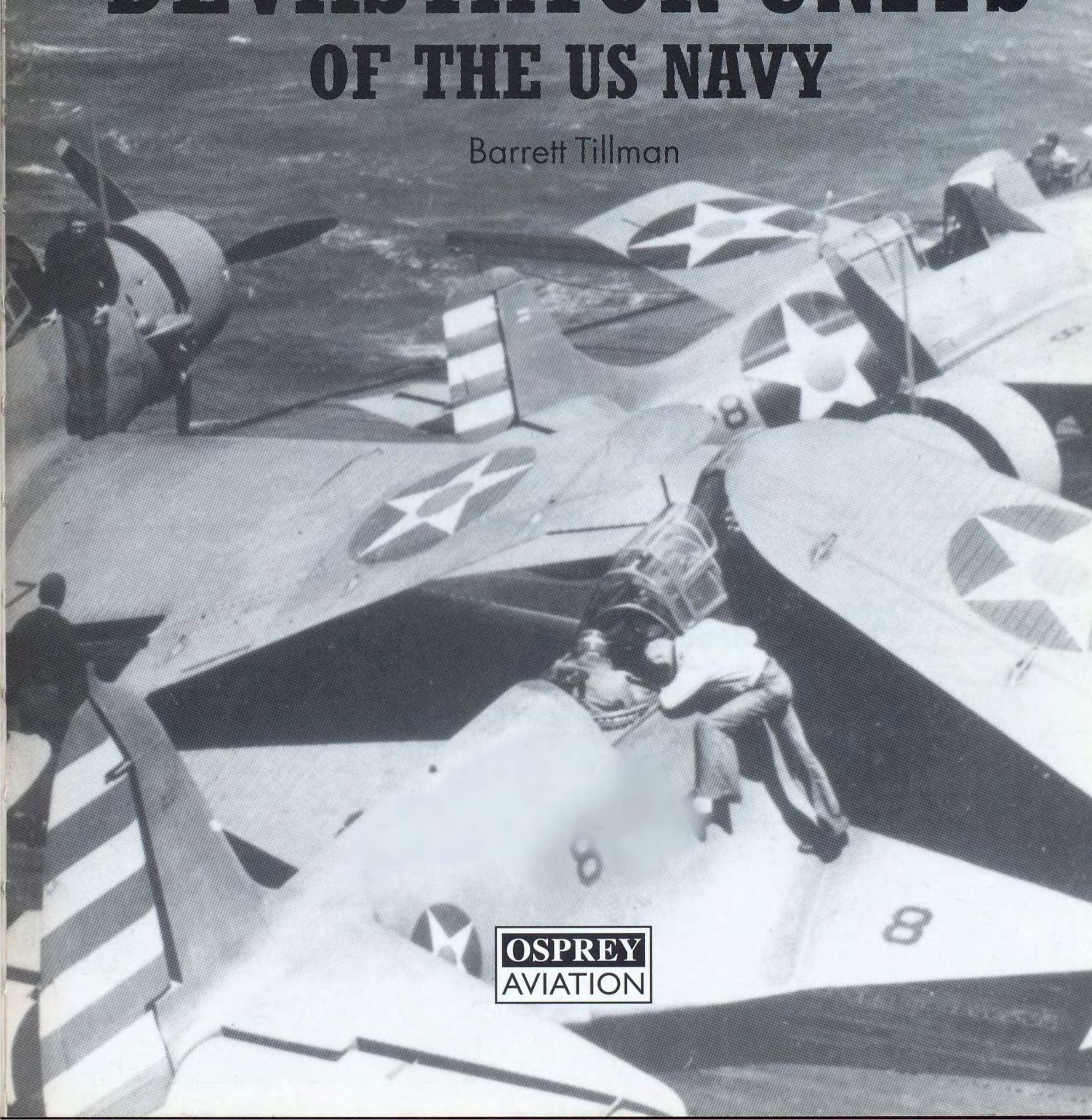

OSPREY AVIATION

Front cover
On the morning of 4 June 1942, 12 TBD-1s of Torpedo Squadron 3 (VT-3) from USS *Yorktown* (CV-5) attacked the Japanese carrier force off Midway Island. The squadron leader, Lt Cdr Lance E Massey, led his Devastators against IJN *Hiryu* despite repeated fighter attacks. During the run-in Massey was shot down, leaving his wingman in the lead. Chief Aviation Pilot Wilhelm G Esders, flying Black 3-T-2 (BuNo 0286), completed the attack, although his gunner, Radioman Robert B Brazier, was mortally wounded. Esders and four others reached the torpedo drop point, but only he and one other VT-3 TBD cleared the enemy task force. The surviving Devastators ditched out of fuel, but both pilots and the remaining gunner were rescued (*cover artwork by Iain Wyllie*)

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EDITOR'S NOTE

To make this best-selling series as authoritative as possible, the editor would be interested in hearing from any individual who may have relevant photographs, documentation or first-hand experiences relating to aircrews, and their aircraft, of the various theatres of war. Any material used will be credited to its original source. Please write to Tony Holmes at 10 Prospect Road, Sevenoaks, Kent, TN13 3UA, Great Britain, or by e-mail at: tony.holmes@osprey-jets.freeserve.co.uk

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A NEW ERA

A new era dawned in US naval aviation when the Douglas TBD-1 torpedo-bomber arrived in the fleet in 1937. As the first monoplane assigned to carrier squadrons, the big Douglas represented a technological milestone for the United States Navy on the eve of World War 2.

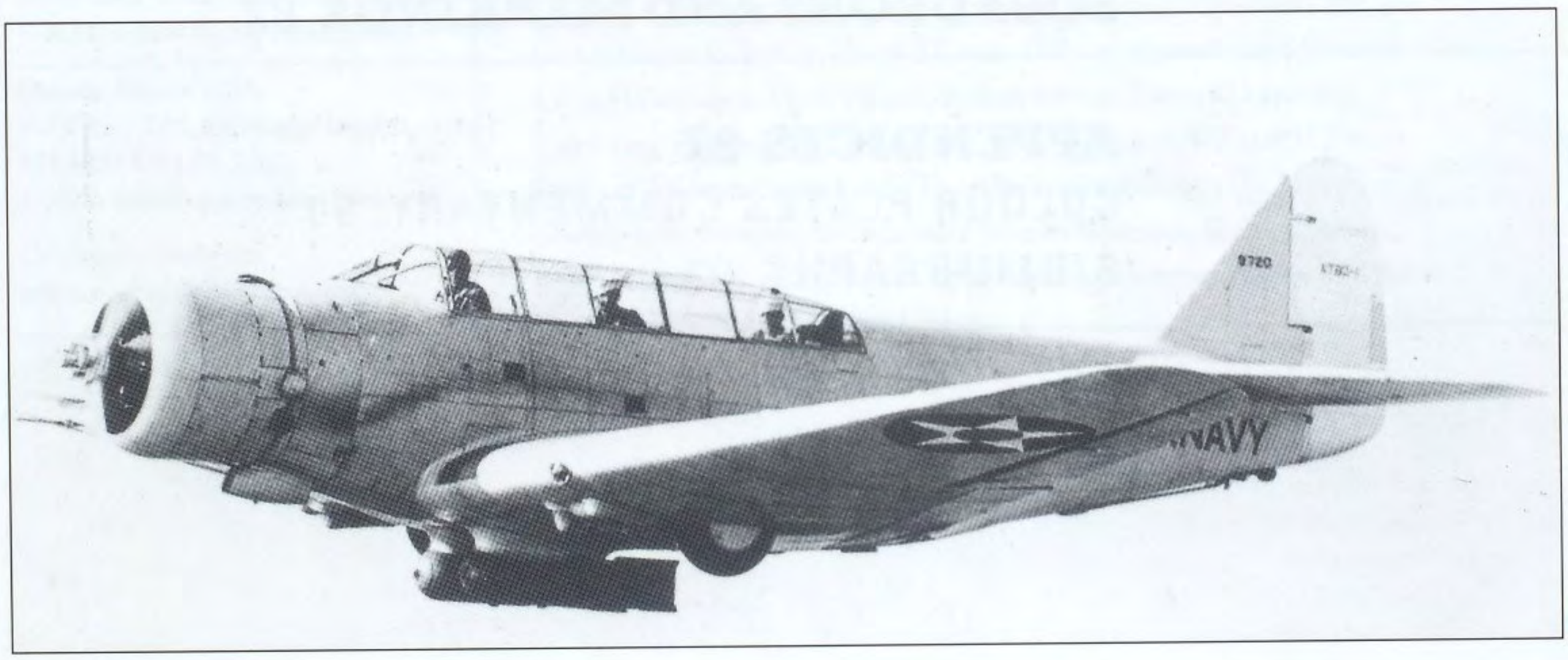
Carrier aviation's attack capability was severely limited in the late 1930s. Although scout-bombers abounded, from 1932 to mid 1937 the navy possessed only one true carrier-based torpedo squadron, VT-2B flying TG-2 biplanes. Actually a Great Lakes version of the Martin T4M from 1926, the TG-2 had a three-man crew seated in open cockpits. It boasted a top speed of just 108 knots, and had a 330-mile range (not radius) carrying a torpedo. One other unit, VT- 1B, flew BM-1 and -2 dive-bombers as a torpedo squadron until ultimately redesignated VB-1B in 1934.

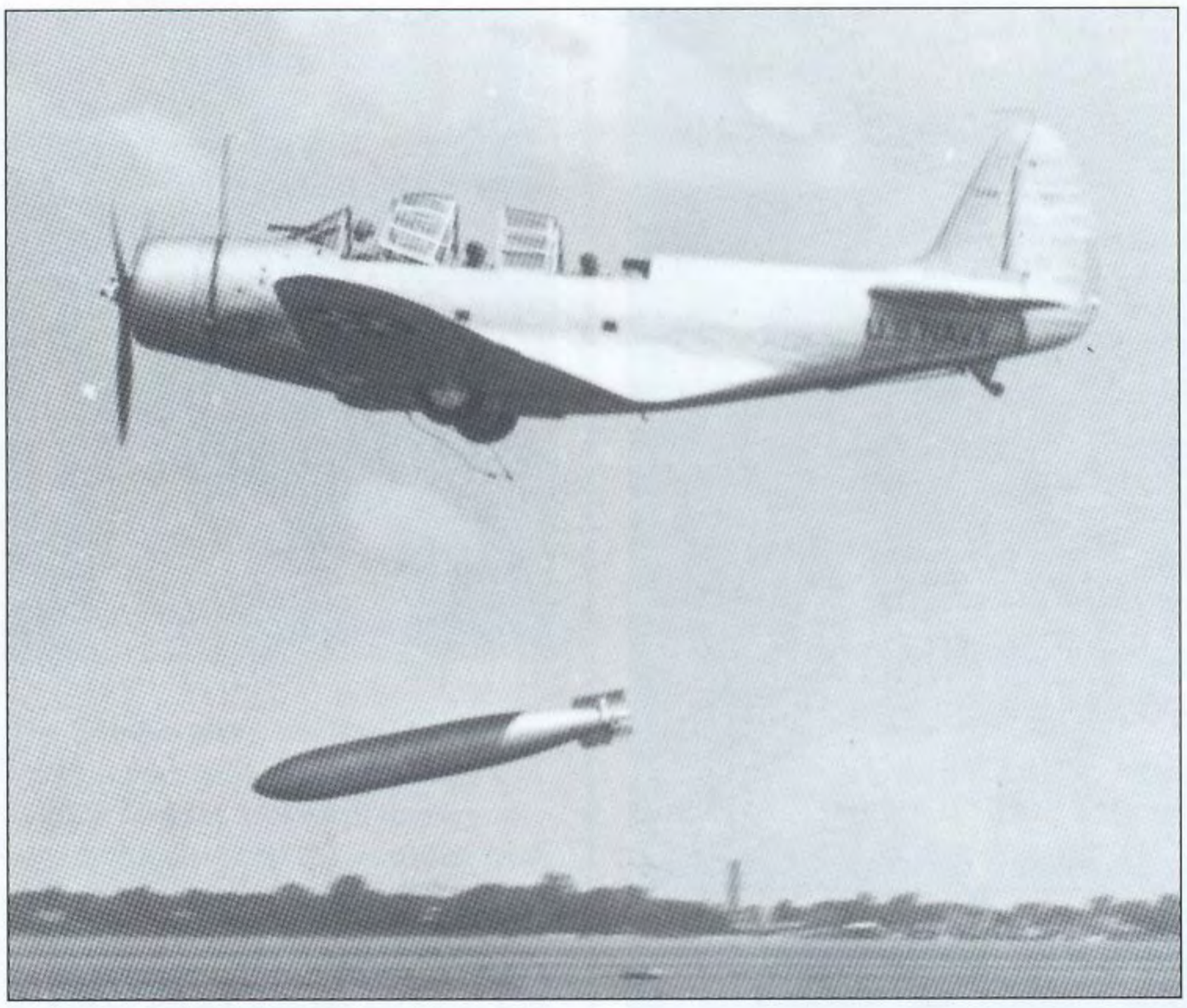
TBD DESIGN AND DEVELOPMENT

With the addition of more carriers in the 1930s, and an evolving doctrine of carrier aircraft employment, the Bureau of Aeronautics sought a more balanced strike component for its air groups. Douglas Aircraft's Washington, DC, representative, John M Rogers, got wind of the proposal in August 1933, and wrote to Douglas manager, 'Dutch' Kindelberger;

'In about a month the Navy will be calling for informal proposals on the development of a VB-VT aeroplane. The specification will be quite general and the Navy will not supply any designs. I just learned that it is proposed to carry the torpedo down by the head 10 degrees to the thrust line. This should make it easier to carry the torpedo . . . by recessing the after end of the torpedo into a tunnel in the bottom of the fuselage. It will be permissible to carry the bombardier in a cockpit between the pilot and gunner, provided he has access to the bombsight by crawling forward under the pilot . . .'

The prototype XTBD-1 (BuNo 9720) is seen carrying two 500-lb bombs during ordnance tests at NAS Anacostia on 14 October 1935. The new torpedo-bomber's first flight had been made on 15 April, less than nine months after Douglas Aircraft signed the contract with the US Navy (*Harry S Gann via the Naval Aviation Museum*)

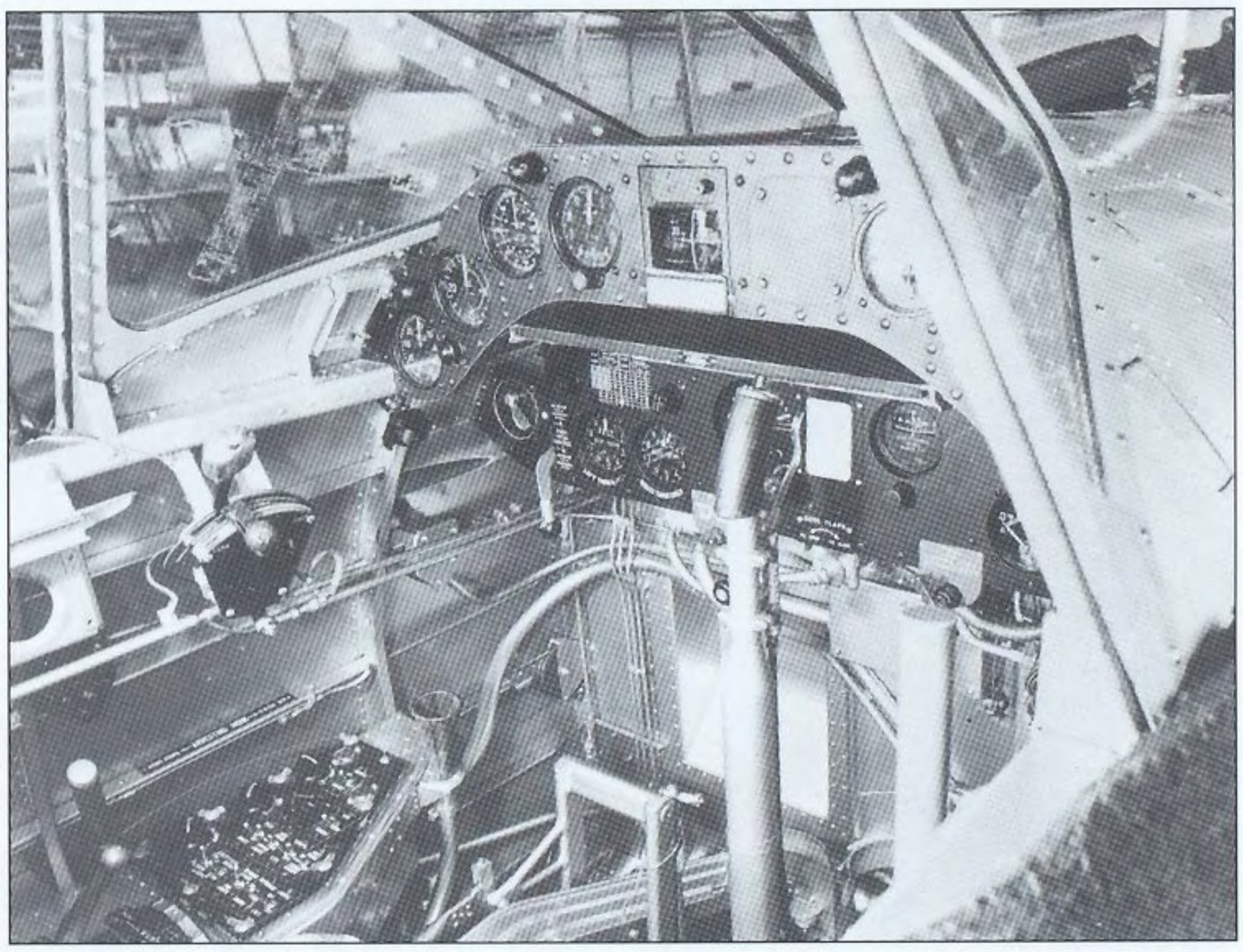




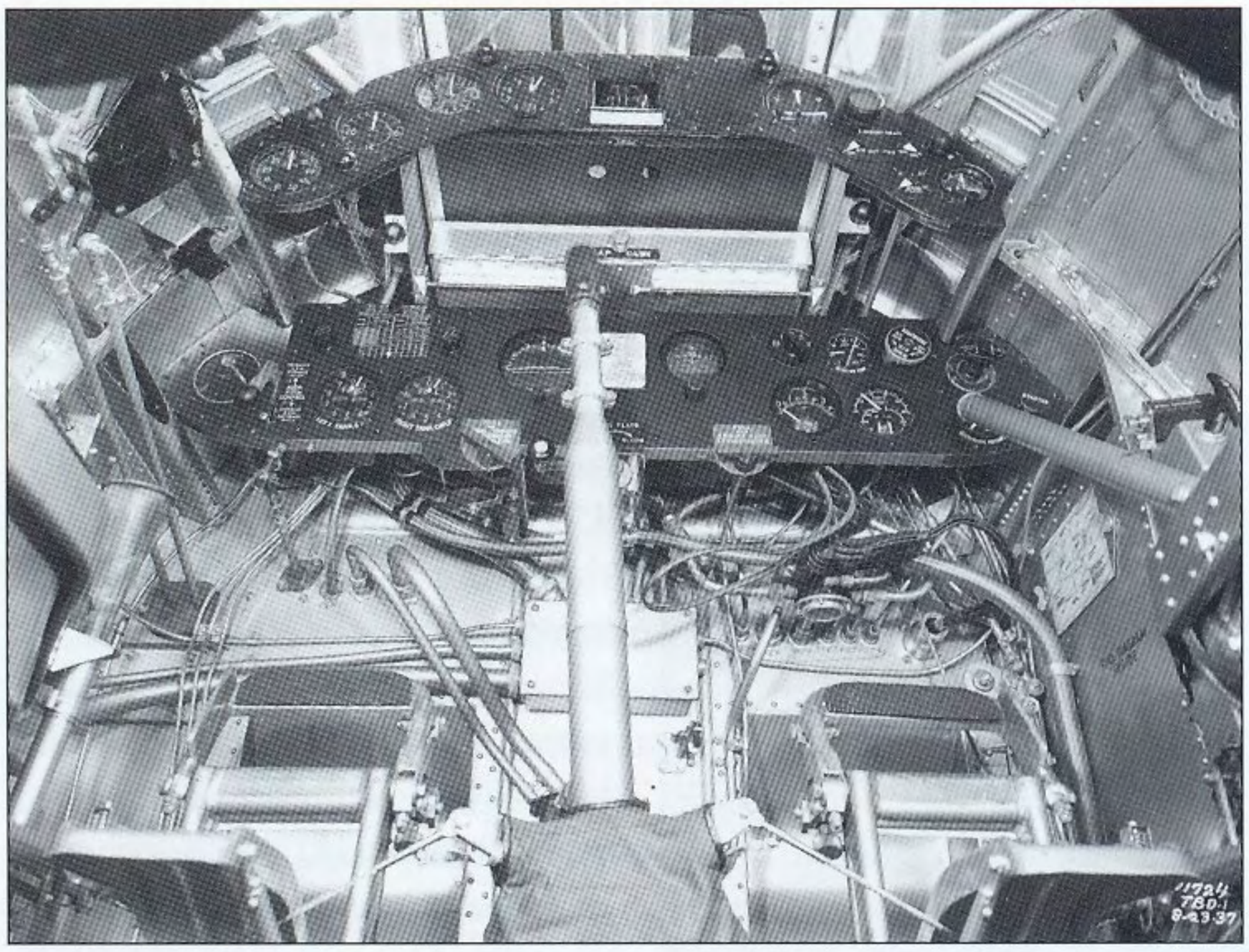
The first production TBD-1 (BuNo 0268) undertakes torpedo drop tests at Hampton Roads, Virginia, in 1937. This aircraft incorporated changes recommended by the Bureau of Aeronautics after evaluating the prototype, and those alterations became standard on subsequent TBDs (*Douglas via the Naval Aviation Museum*)

Rogers' information was accurate, though the contract announcement was delayed several months. The Santa Monica engineers were more enthused about their monoplane fighter design, the FD-1, but nothing came of the proposal. However, on 30 June 1934 the navy formally issued a requirement (SD-119-3) for a modern replacement of the ageing TG-2. Three companies responded: Great Lakes, Hall, and Douglas. The field was quickly narrowed, for Great Lakes proposed a biplane and Hall's XPTBH-2 was a float monoplane, which although designed along modern lines, was unsuitable for carrier use. Thus, the Santa Monica, California, firm headed by Donald Douglas won the contract by default. Design proceeded under chief engineer Fred Herman, while the torpedo aeroplane project was headed by Frank Fleming. Factory documents also show that A E Raymond was heavily involved.

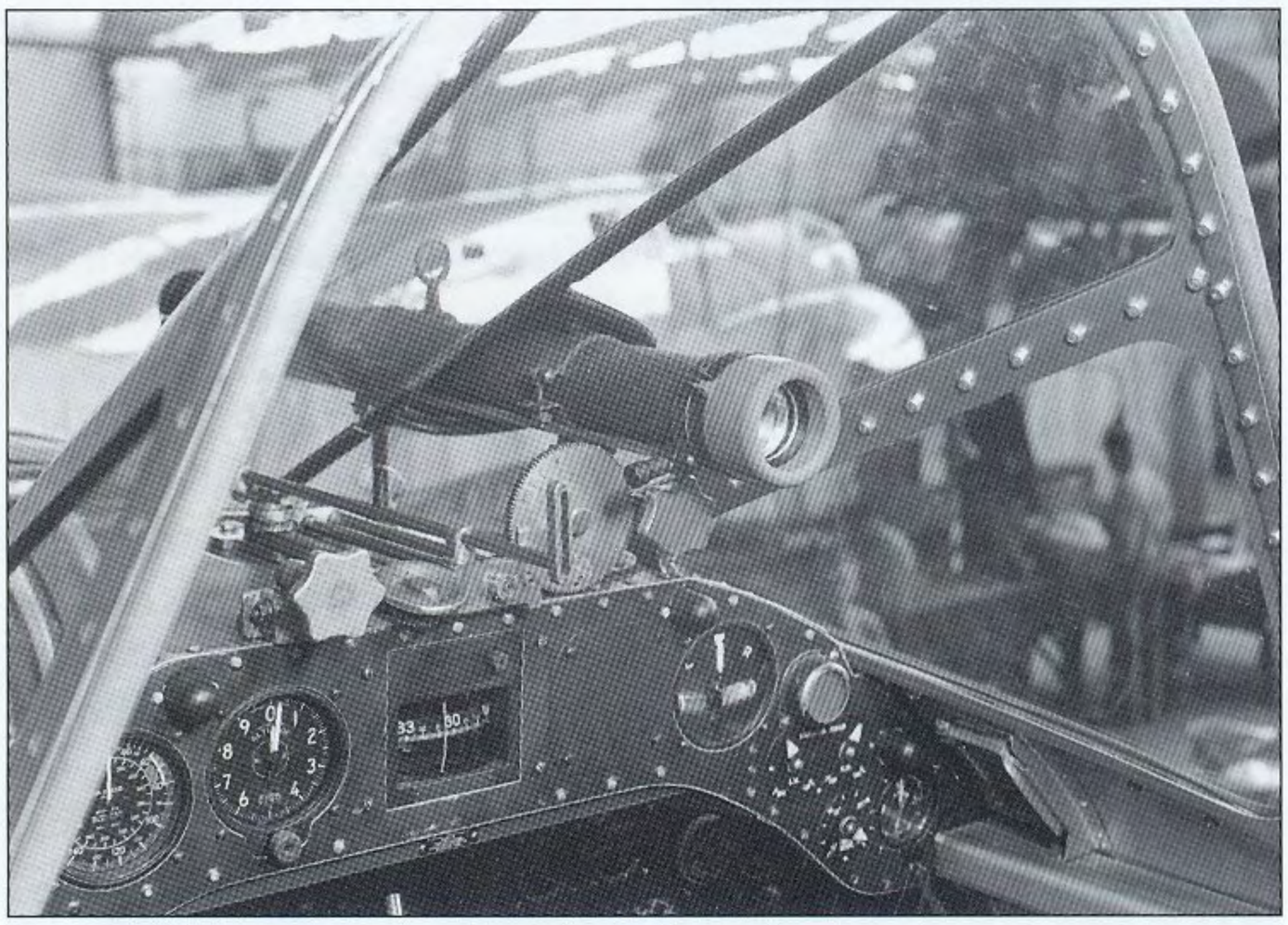
The resulting XTBD-1 (apparently originally designated XBTD-1 circa January 1934) was unlike anything then flying from aircraft carriers. A big, all-metal monoplane, it was powered by the 800-hp Pratt & Whitney R-1830-60 radial engine. With power folding wings, the Douglas reduced its 50-ft span to 25 ft 8 in for carrier storage. Semi-retractable landing gear and partially enclosed torpedo helped streamlining for a top speed of 175 knots at 8000 ft. Tactical range was a big improvement over the TG too – 450 miles with a torpedo and 900 miles with a 1000-lb bomb. Retained from the previous era was the three-man crew of pilot, second pilot/bombardier and radioman/gunner.



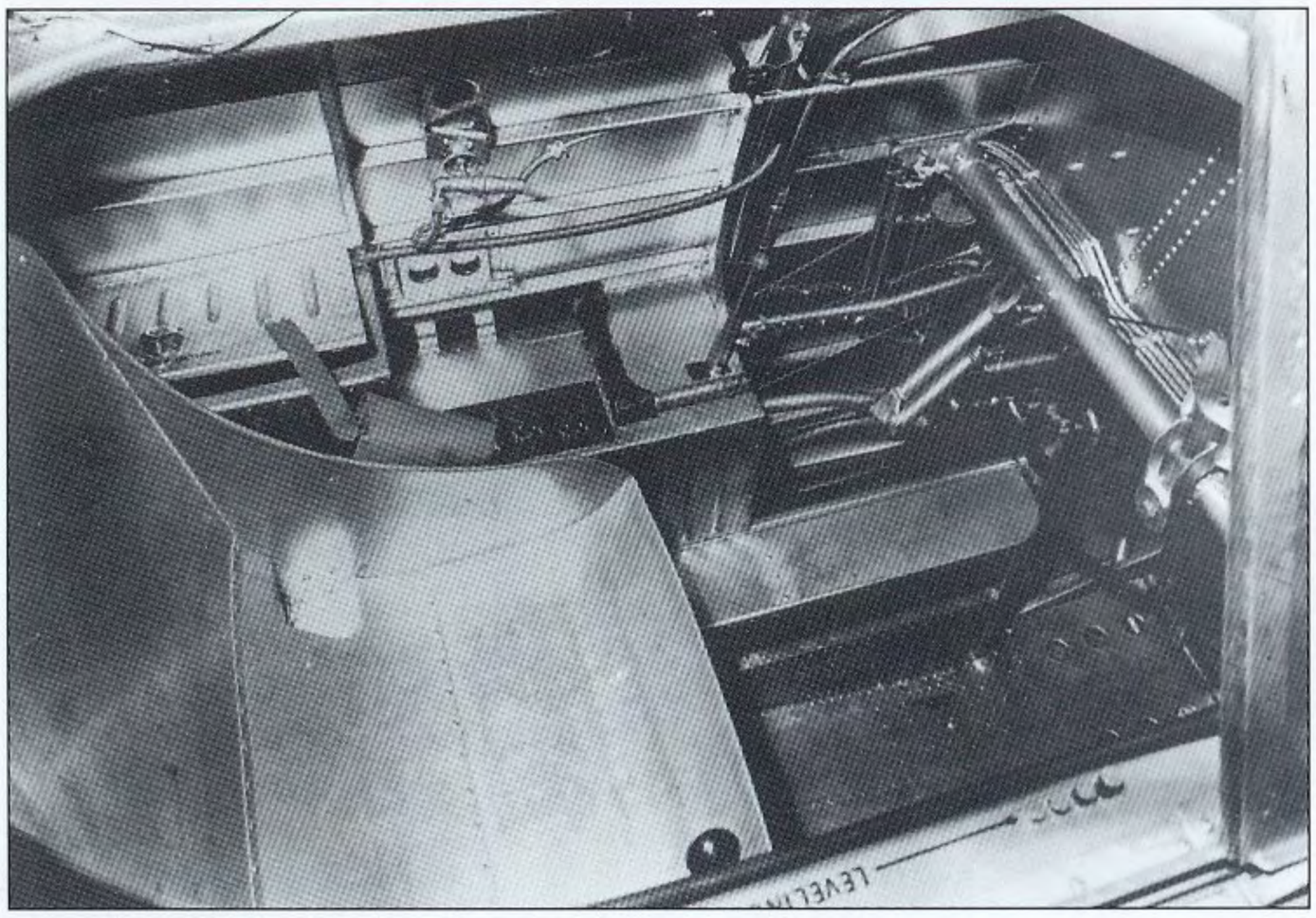
This manufacturer's photo reveals the pilot's cockpit of the TBD-1. The throttle quadrant is clearly visible in the centre-left of the shot, as is the rudimentary instrument panel. Gauges on the latter include airspeed and vertical speed indicators, an altimeter and a magnetic compass. The lower panel includes the magneto switch, propeller pitch control, cowl flap handle, fuel gauge, artificial horizon and gyro compass (*Douglas via the Naval Aviation Museum*)



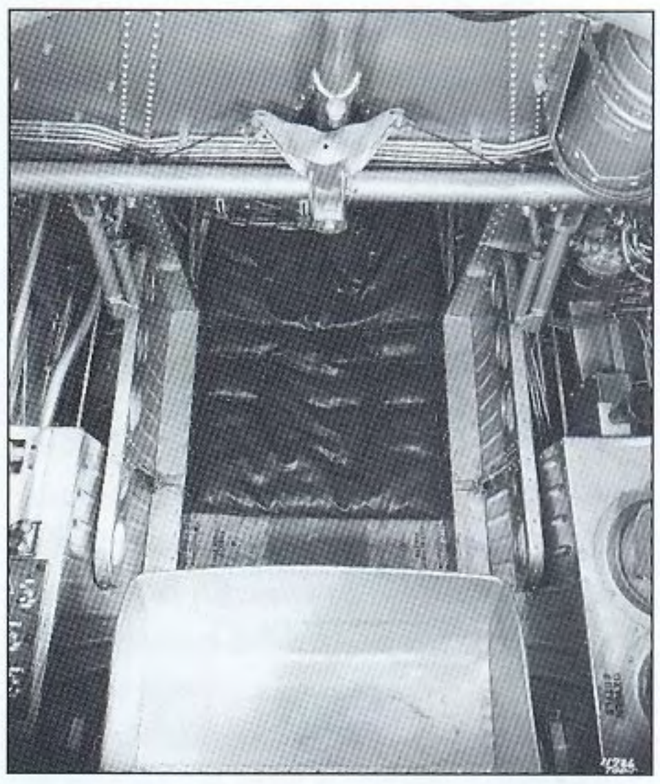
This worm's eye (or second pilot/bombardier's) view of the cockpit, taken in August 1937, reveals further details of the pilot's position in the TBD-1 (*via Michael O'Leary*)



Yet another official Douglas shot, this close-up reveals details of the pilot's Mk III, Mod 2 telescopic gunsight, which was mounted to the windshield of the TBD-1. Note also the simple ring and bead sight attached to the gunsight. The Mk III was used by the pilot when firing the engine cowling-mounted machine gun. Immediately below the gunsight is the Mk XXIV torpedo director sight, which was operated by estimating the target's speed, distance and weight. Once correctly input, these figures allowed the sight to calculate the exact release point for the torpedo (*via Michael O'Leary*)



The middle cockpit was designated the 'second pilot's seat' in this July 1937 photo. Rudimentary flight controls indicate that the observer/bombardier was more concerned with military duties than flying the aeroplane (*USN via the Naval Aviation Museum*)



The bombardier's position forward and below the seat in the TBD-1's middle cockpit. Note the mat upon which the observer/bombardier laid while prone in the aircraft's belly (*Harry S Gann via the Naval Aviation Museum*)

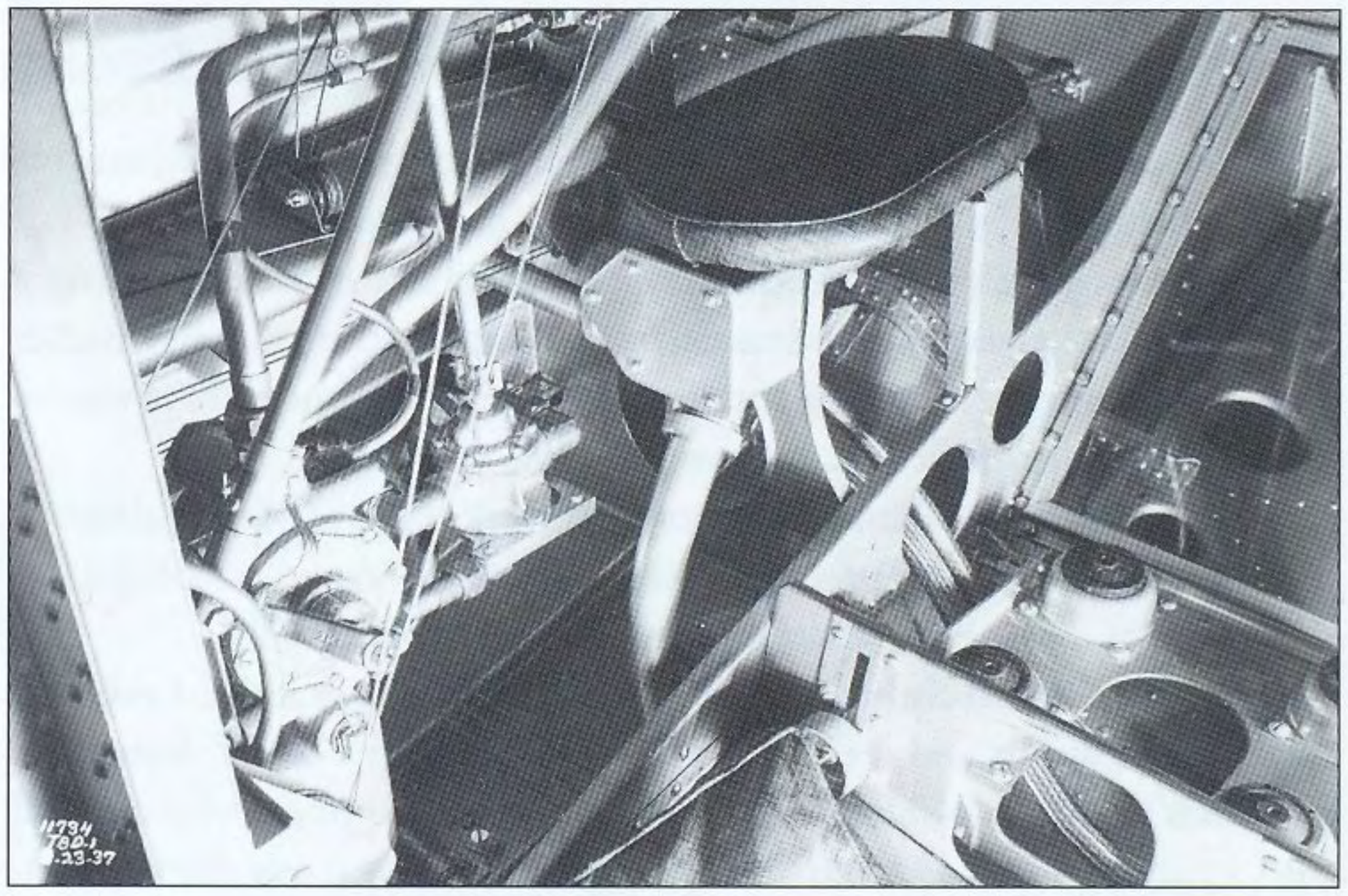
This small padded armrest offered the cramped bombardier a crumb of comfort when operating the Norden Mark XV Mod 3 bombsight. The latter device is absent from this shot, being deemed too secret to be photographed in 1937. The large black computing sight was normally fixed to the four shock-resistant supports seen in the lower right corner of this photograph (*via Michael O'Leary*)

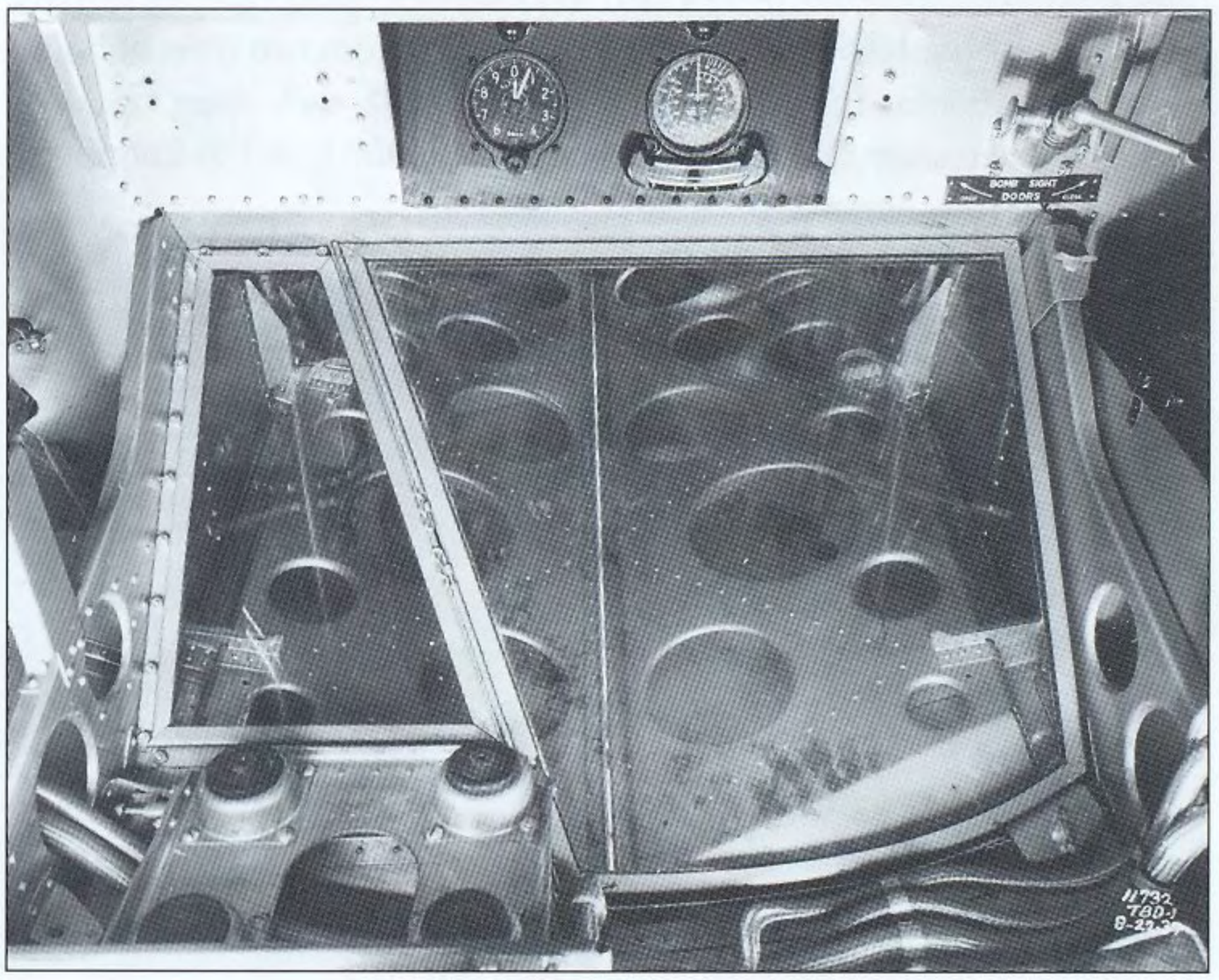
The bombardier's window is perfectly illustrated in this Douglas factory photograph, the doors which protected the flat glass transparency when not in use being shown firmly shut. The crank handle used to open the doors can be seen in the upper right hand corner, whilst the instruments immediately above the window are an altimeter and an air speed indicator – both crucial gauges for the bombardier when performing a level bombing attack. The Norden bombsight's four shock-resistant supports can also be seen in the lower left corner of this photograph (*via Michael O'Leary*)

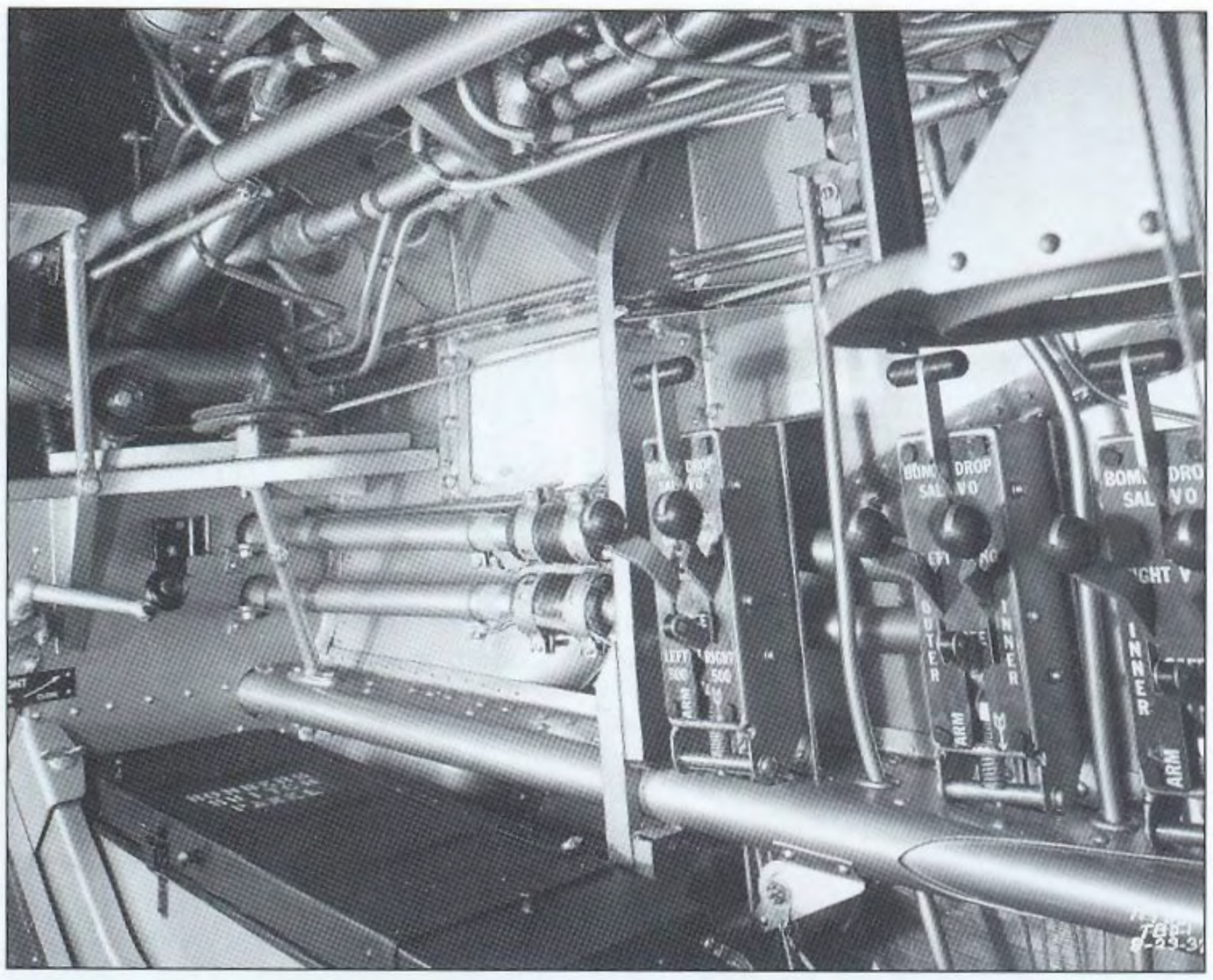
The XTBD-1 (Bureau of Aeronautics Number, or simply BuNo, 9720) was first flown at Santa Monica on 15 April 1935, ten-and-a-half months after BuAer's proposal. On 24 April the new torpedo aeroplane was delivered to Naval Air Station (NAS) Anacostia, District of Columbia, for flight test evaluation, which continued at NAS Norfolk, Virginia.

The Inspector of Naval Aircraft stationed at the Douglas factory subsequently oversaw a 150-hour accelerated service test of the XTBD-1 during 1937. Generally, the results were satisfactory, with the main problem being excessive engine vibration that caused cylinder bolts and cockpit fittings to loosen. Appropriate changes were made to the engine mount.

The only aerodynamic problem mentioned was an unwarranted rolling motion as the aircraft approached the stall, but Douglas made modifications 'which caused the approach of the stall condition to announce itself very emphatically to the pilot'. Changes were also called for in a variety of lesser areas, including glass panels in the canopy as well as cockpit lighting. Carrying a 1000-lb bomb, the prototype achieved 206 mph







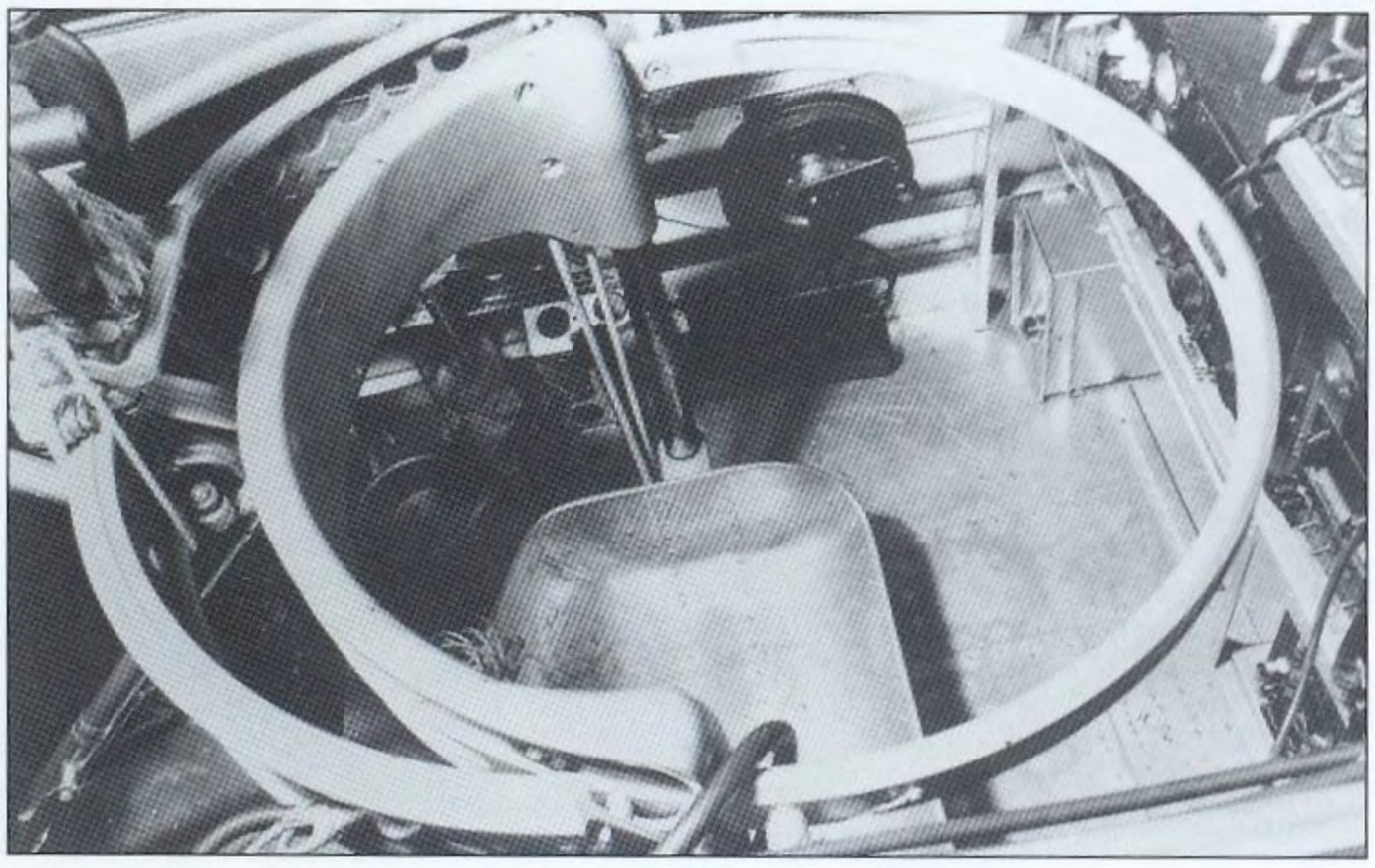
The bombardier's release handles for the TBD-1's three bomb racks – fuselage centreline and outboard wing racks – can be seen in this photograph. These arming and release fixtures were mounted on the starboard side of the fuselage compartment (*Harry S Gann via the Naval Aviation Museum*)

(172 knots) at 8000 ft, with a slightly reduced top speed at altitudes up to 16,000 ft.

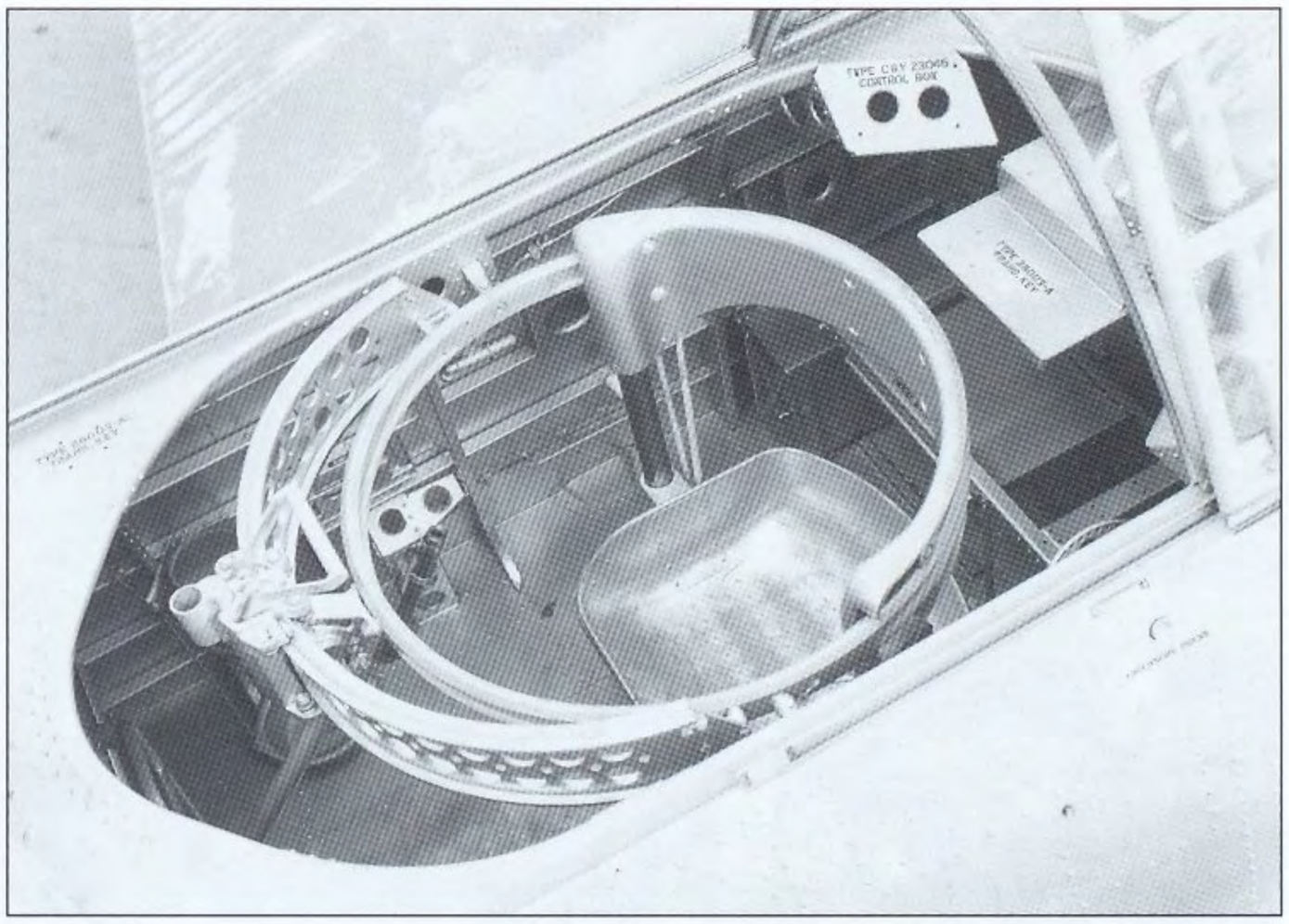
Navy tests demonstrated buffeting and wing distortion following a series of spins, especially with ordnance aboard. Consequently, BuAer issued a warning against spins with flaps fully lowered, but as there was no reason to perform such a manoeuvre, concern was waived.

Dive tests from 6000 ft or more with recovery at about 3500 ft demonstrated ability of the airframe to withstand acceleration approaching 4 Gs. All dive tests were performed at an aircraft weight of 9145 lbs.

Ordnance trials at Dahlgren and Norfolk, Virginia, examined suitability for both bomb and torpedo release. The aircraft's 'belly' featured a Mark XV Mod 3 bombsight operated by the second pilot, who crawled into a confined space beneath the first pilot's feet to reach the Norden. The awkward arrangement worked, as electrically activated drops were safely made using 100-, 500- and 1000-lb bombs from two types of bomb mounts – racks for three '100 pounders' beneath each wing could be removed if necessary. All runs were made from 7000 ft at 120 knots.

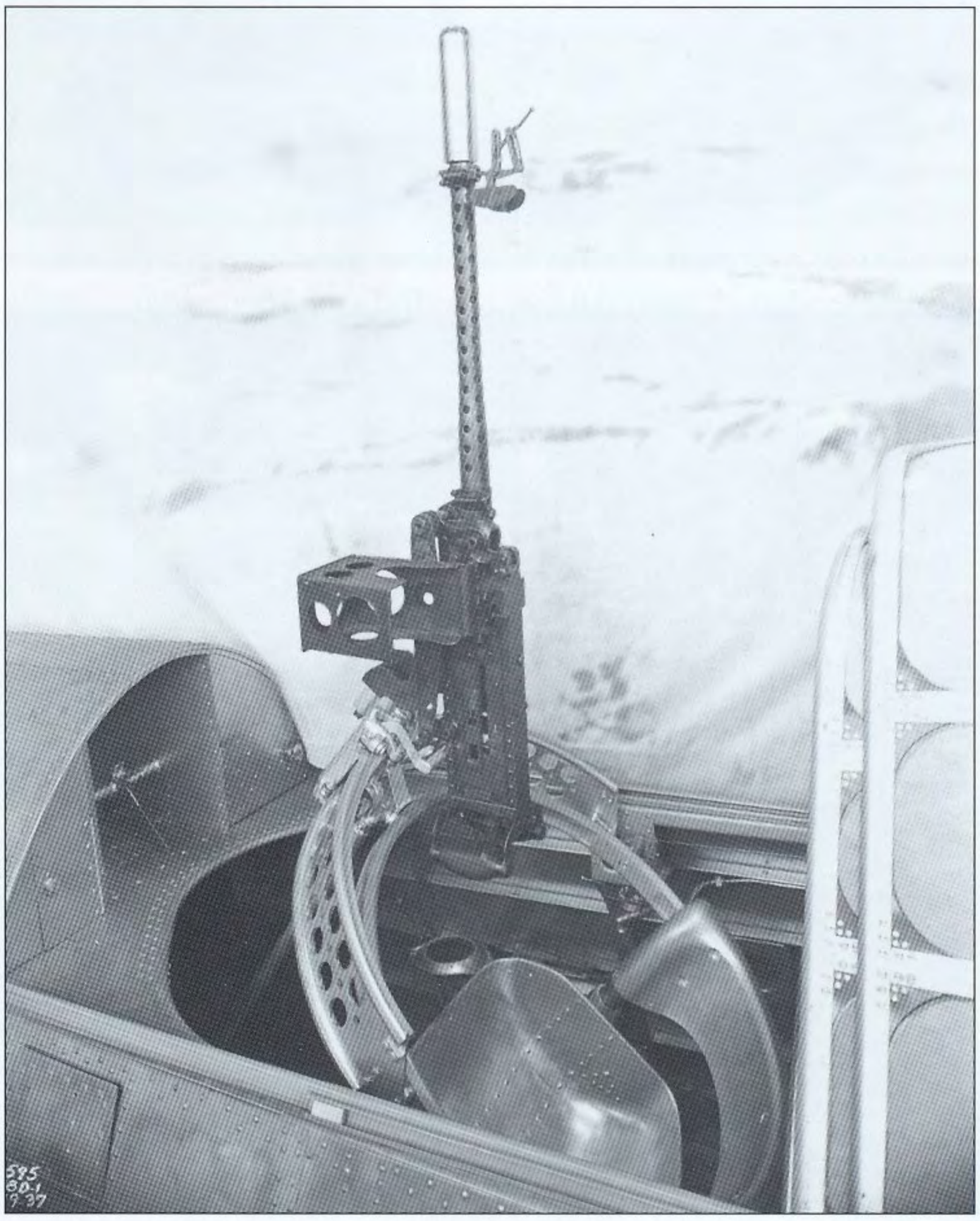


This port side view of the rear cockpit clearly shows the radioman-gunner's swivel seat and mount for the single .30-cal gun at the extreme left. Radio equipment is placed on the shelf immediately forward of the gunner's ring, with the Morse Code key atop the radio set (*USN via the Naval Aviation Museum*)



The radioman-gunner's position from the starboard side. Both the Browning gun and the radio equipment has yet to be fitted, the latter being installed in the spaces marked 'TYPE 26003-A TRANS. KEY' and 'TYPE CBY 23046 CONTROL BOX' (*via Michael O'Leary*)

This was how the radioman-gunner's position looked when the Browning gun had been attached to its swivel mounting. Note how the seat moved with the gun, the former being capable of traversing 180° horizontally, 90° vertically (it is seen in this position) and fully 360° in rotation. The magazine for the weapon could be filled with up to 600 rounds. Note the flexible windage type forward gunsight and flash arrestor fitted to the gun's barrel. When note in use, the Browning was usually stowed in the upper fuselage slot located behind the gun, this being accessed through two downward-folding doors (*via Michael O'Leary*)



Torpedo release was tested with the primary (electrical) and secondary (manual) systems without difficulty. Mark 8 torpedoes were dropped at 25 and 30 ft altitude, the full test comprising just two drops!

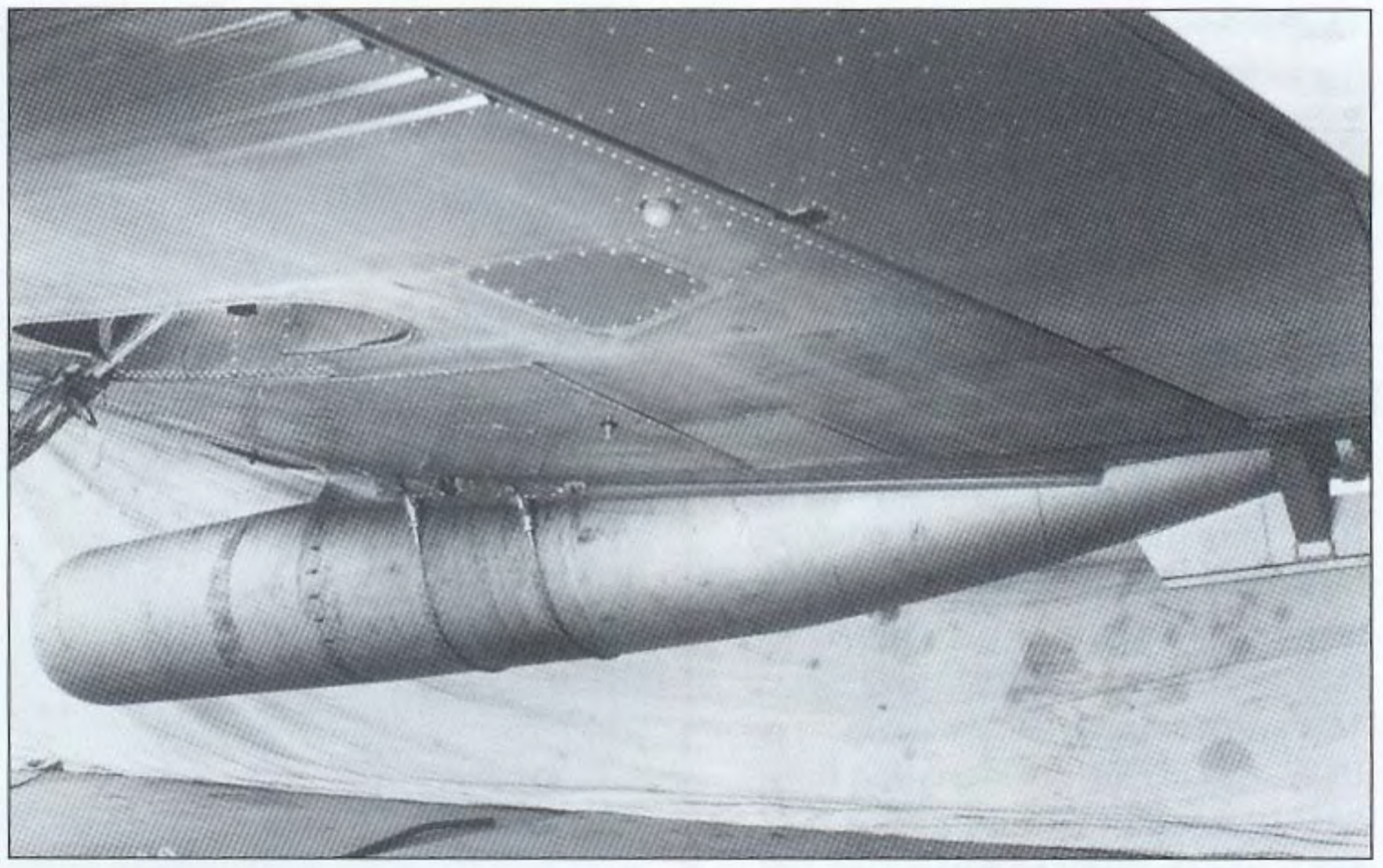
Following ordnance tests the Douglas was ferried cross-country back to California, where carrier trials began on board USS *Lexington* (CV-2) in December. Three pilots logged 13 launches and landings without notable difficulty, the big bomber proving stable coming aboard ship mainly thanks to its 420-square foot wing area.

Among the witnesses to the XTBD-1 trials was Seaman Thomas F Cheek, later a Devastator pilot himself;

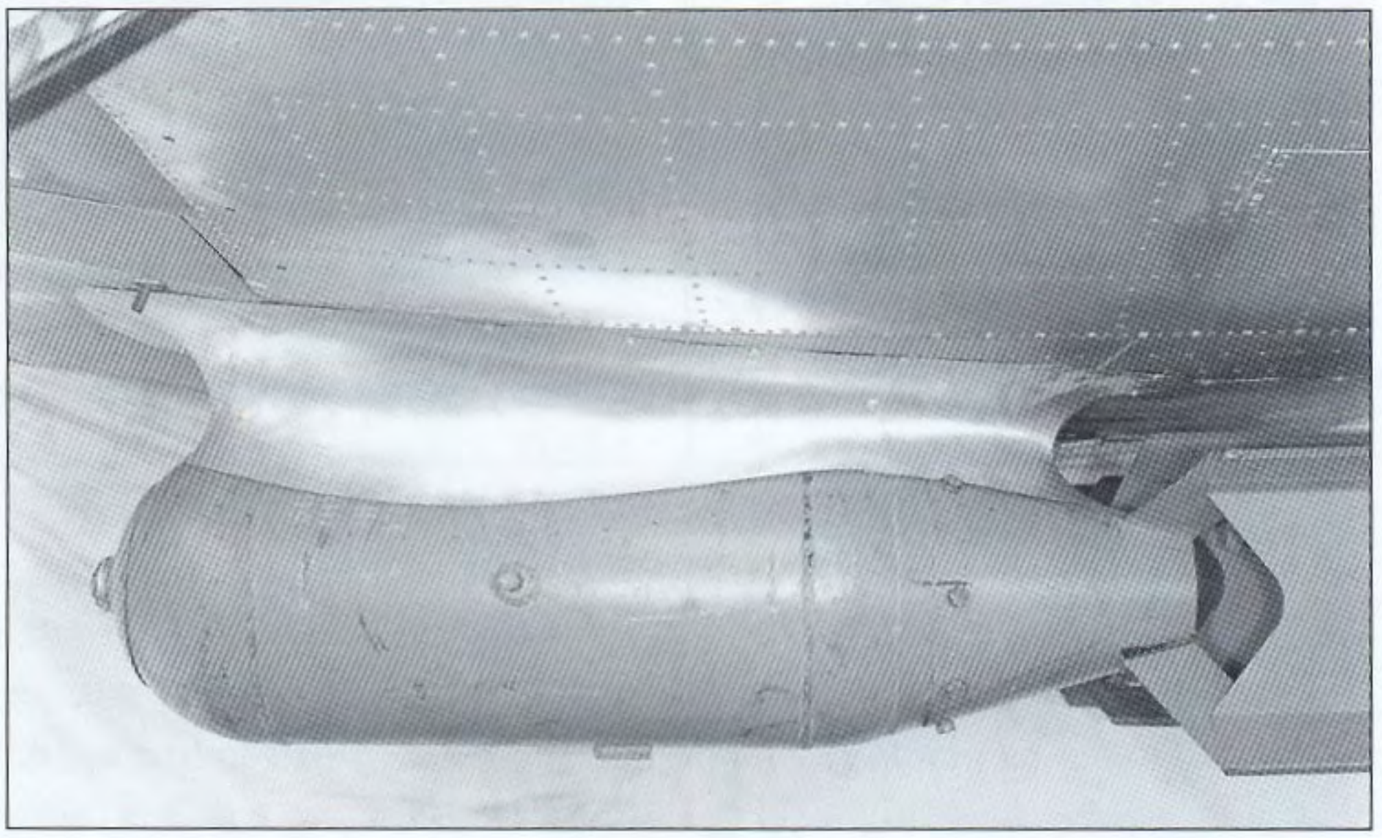
'I was fresh from boot camp and aboard my first ship, the "Lady Lex", when I for the first time watched an aeroplane land aboard a carrier. Everyone on the ship that could was watching as this new plane approached for a landing. The plane settled to the deck, and as it was snubbed to a stop by the arresting wire, the wings began to fold upward.

'There was an instant response from the "hot papa" in his fireproof asbestos suit, while the fire crews scampered out from the nets deck-side, no one was sure what would happen next – first impression was that the plane was disintegrating as we watched.

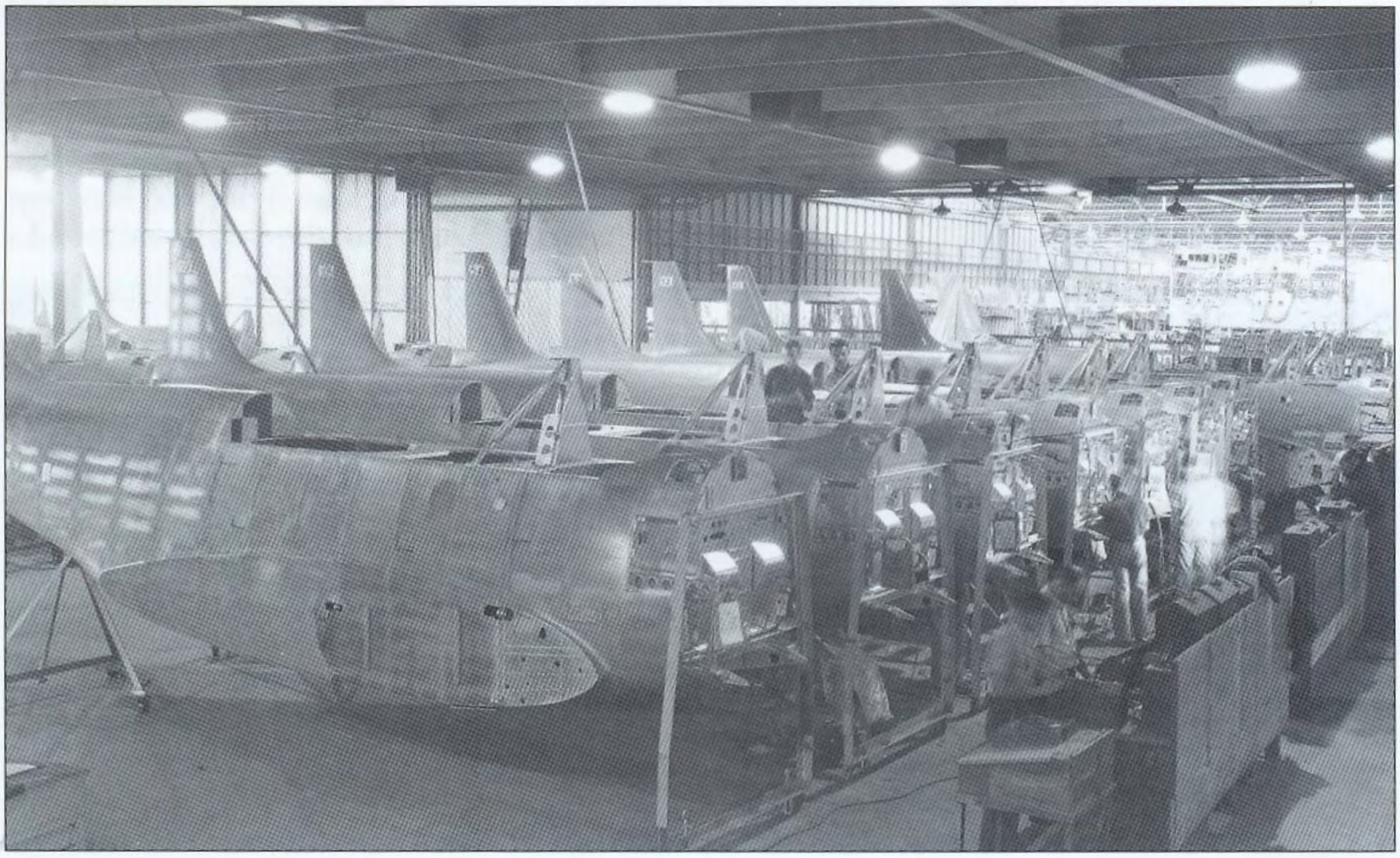
A Mk 13 aerial torpedo is seen installed in the recessed bay of an early TBD-1 in July 1937. The weapon was mounted in a 10-degree downward position to help ensure proper nose-first water entry, as torpedoes striking the surface at a shallow angle often broached and ran erratically (*USN via the Naval Aviation Museum*)



When undertaking the level bombing role, the TBD-1 could carry 100-, 500- or 1000-lb bombs. These are '500 pounders', two of which are seen fitted to streamlined centreline mountings (*via Michael O'Leary*)



More than a dozen TBD-1s can be seen taking shape on the factory floor at Douglas's Santa Monica, California, plant on 7 January 1938. The substantial pyramid-shaped turnover structure fitted immediately aft of the pilot's cockpit is clearly visible on all of these airframes (*via Micahel O'Leary*)

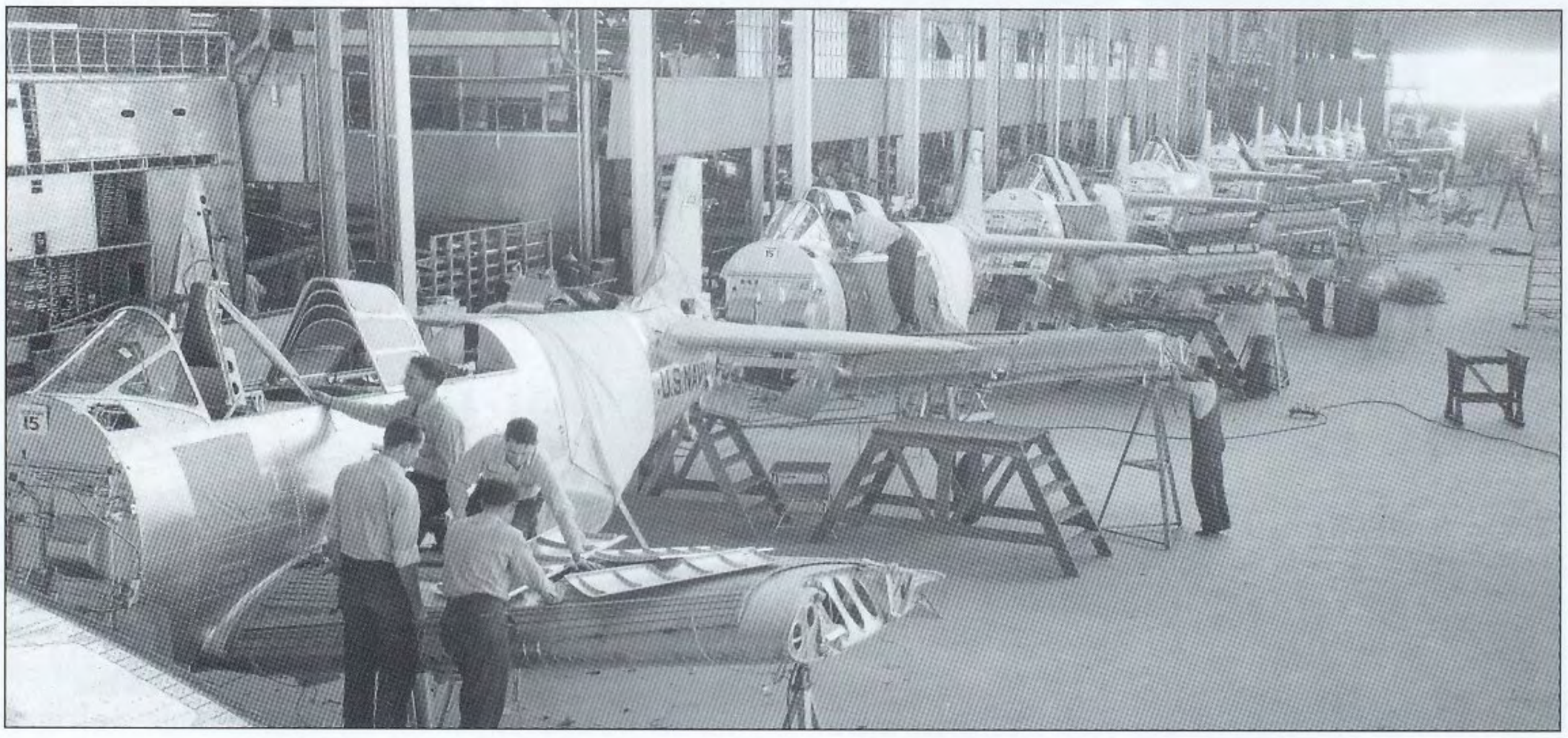


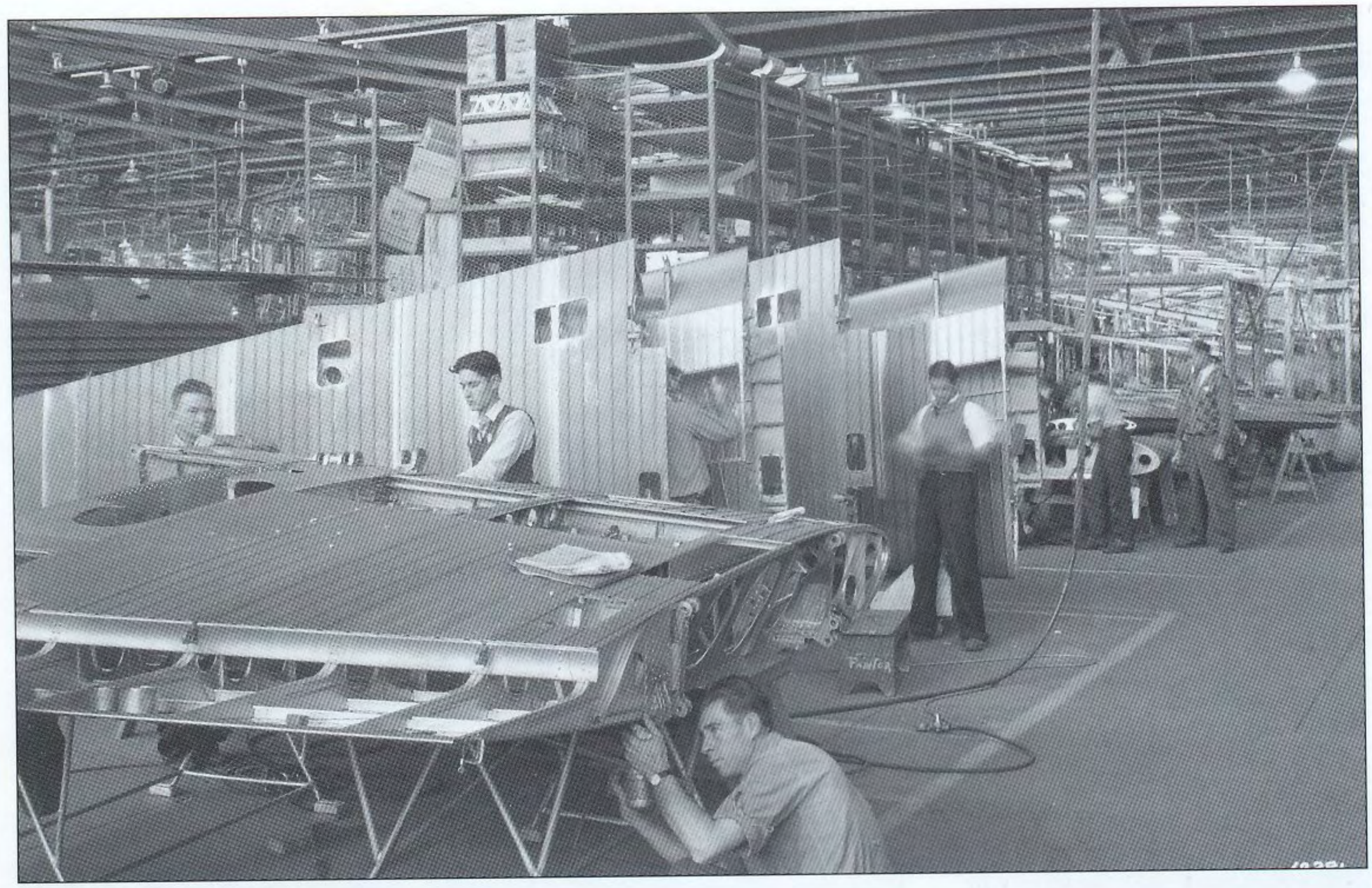
'Locking and unlocking the wings was not that easy in the planes we flew. The wing lock was controlled by a cable system, operated be a small hand crank located to the left of and slightly back of the pilot. After one near fatal accident and a fatal wing folding on take-off (VT-2 and VT-5 respectively), the operating mechanism was remodelled – a control was placed in the second pilot's ballroom, and it became his responsibility to lock and unlock the wings. Add my name to those who liked to fly the TBD – it was an honest plane to fly, and a workhorse in its time.'

From NAS San Diego, California, the prototype returned to Santa Monica, where Douglas incorporated modifications requested by BuAer.

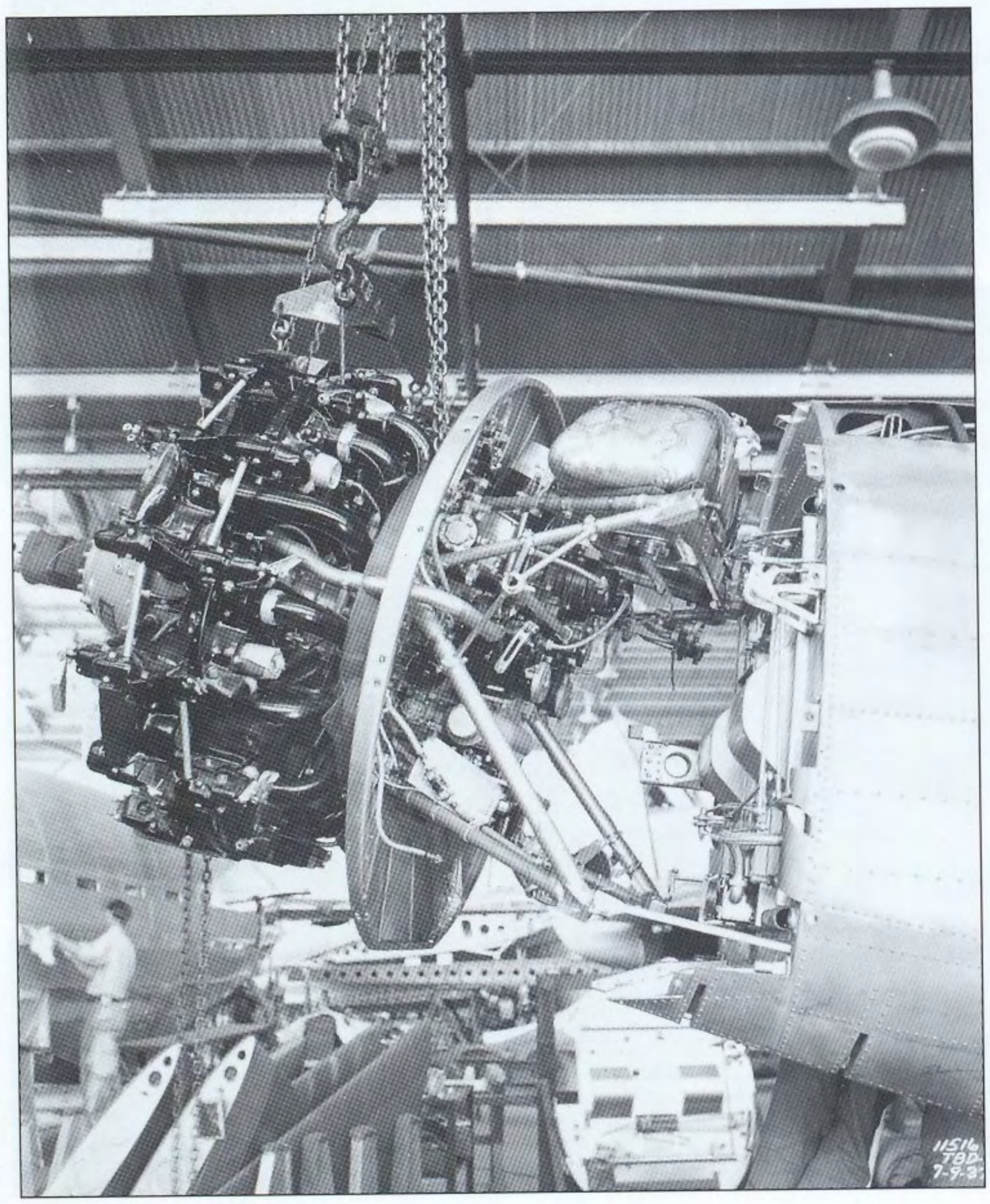
Factory floorspace was at a premium at Santa Monica in early 1938, with TBD-1s squeezed in alongside B-18A Bolo twin-engined bombers destined for the US Army Air Corps (*Harry S Gann via the Naval Aviation Museum*)

These TBD-1s are having flotation bags, cockpit wiring and canopies installed at production stations 14 and 15 (*Harry S Gann via the Naval Aviation Museum*)

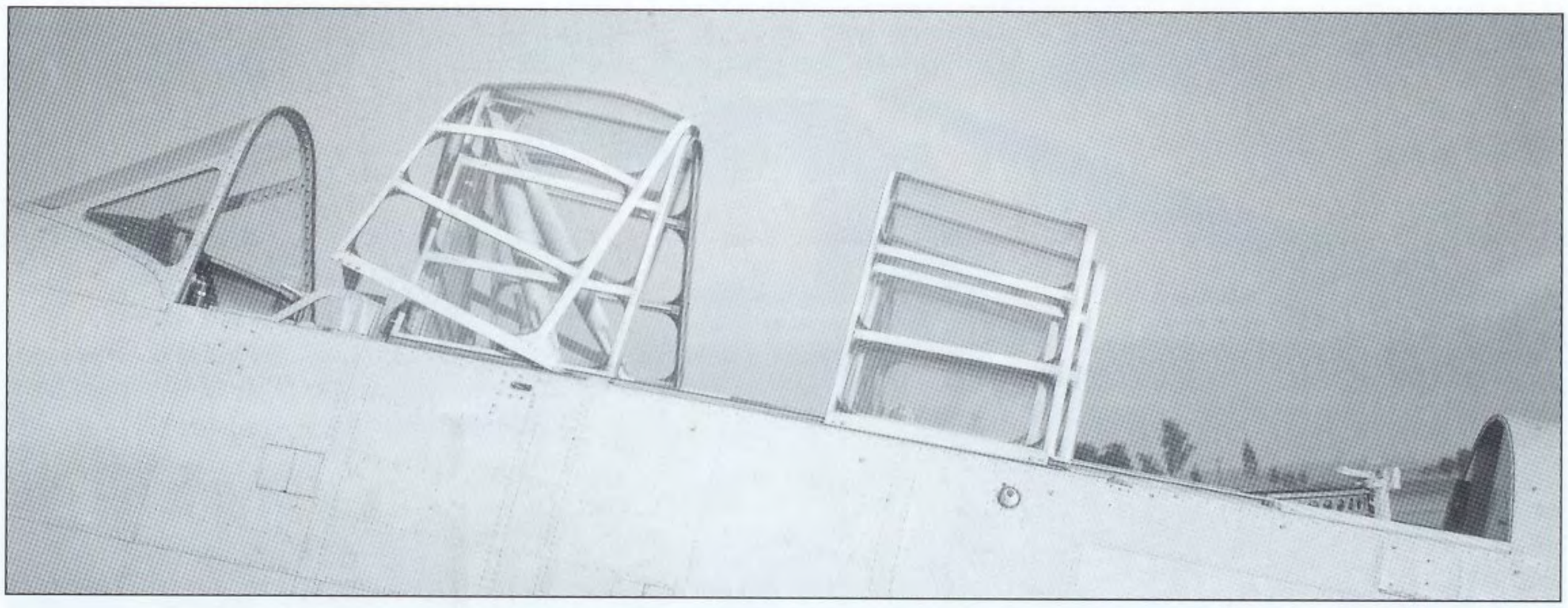




Douglas workers assemble wing panels and centre sections for early production TBD-1s in January 1938 (*Harry S Gann via the Naval Aviation Museum*)



A chain hoist is used to lift a 900-hp Pratt & Whitney R1830 radial engine into place on the factory floor in July 1937 (*Harry S Gann via the Naval Aviation Museum*)



Meanwhile, the navy issued a production contract for 114 TBD-1s on 3 February 1936, and the first of these, BuNo 0268, was delivered to Anacostia on 3 August 1937.

The 1937 test summary concluded;

'The TBD-1 was found to be superior in performance to any horizontal bomber or torpedo plane in use by the Navy, has excellent flying characteristics, and is considered to be entirely suitable for operation from aircraft carriers or from a flying field.'

Production TBDs differed little from the prototype. The most obvious differences were the higher canopy to accommodate a turnover structure and the oil cooler moved beneath the starboard wing root. But of more importance was another 100 horsepower in the R-1830-64, resulting in slight airspeed gains over the 'X model'. Tactical range with a 2000-lb torpedo was 435 miles, and 715 with a 1000-lb bombload. These were, of course, ideal specifications. In fleet service TBDs probably never flew a strike of 200 miles radius.

The ordnance test aircraft, BuNo 0268, was the first production TBD. Retained for development and testing, it became the TBD-1A with the addition of floats for use at the Naval Torpedo Station at Newport, Rhode Island, from September 1939.

Two production batches were delivered – Bureau of Aeronautics numbers 0268-0381 from August 1937 to June 1938, and 1505-1519 (15 aircraft) between June and October 1939. Original factory flight checks were done by test pilot Vance Breese but soon were turned over to John Cable, freeing Breese for experimental work.

Douglas-Navy contact was frequent during the development phase, even including discussion of basic design changes. For instance, in January 1937 engineer A E Raymond replied to the company's Washington representative regarding navy interest in tricycle landing gear on the torpedo bomber;

Above
A close-up view of the XTBD-1's tailhook installation, which was tested in November 1936. The small, hard rubber tyre fitted to the tailwheel was typical of this era (*Harry S Gann via the Naval Aviation Museum*)

Top
At the navy's request, the original flat-topped canopy was raised to accommodate a turnover structure behind the pilot's seat. This photo of the XTBD-1 clearly shows the arrangement for opening all three cockpit enclosures: pilot, bombardier and gunner (*Harry S Gann via the Naval Aviation Museum*)

'As for the possibility of putting this type of gear on one of the TBDs, I can say without taking any more time to study the matter that it would be practically impossible, particularly if the gear were to be made retractable. I believe it will ordinarily not be feasible to put this type of chassis on a single-engined aeroplane because in most aeroplanes . . . the nose is not long enough to provide sufficient fore and aft distance between the nose wheel and the main wheels. In any case, due to the necessity of moving the main wheels back of the centre of gravity, and due to the relatively heavy loads that come on the nose wheel, it will be necessary to incorporate the tricycle gear in the original design rather than adding it as an afterthought.'

Raymond further stated that the most likely candidate for a tricycle landing gear carrier aircraft would be 'a small bi-motor' type. Ironically, Douglas' main competitor in the naval field produced just such a type seven years later – the Grumman F7F Tigercat, which was designed to be torpedo capable.

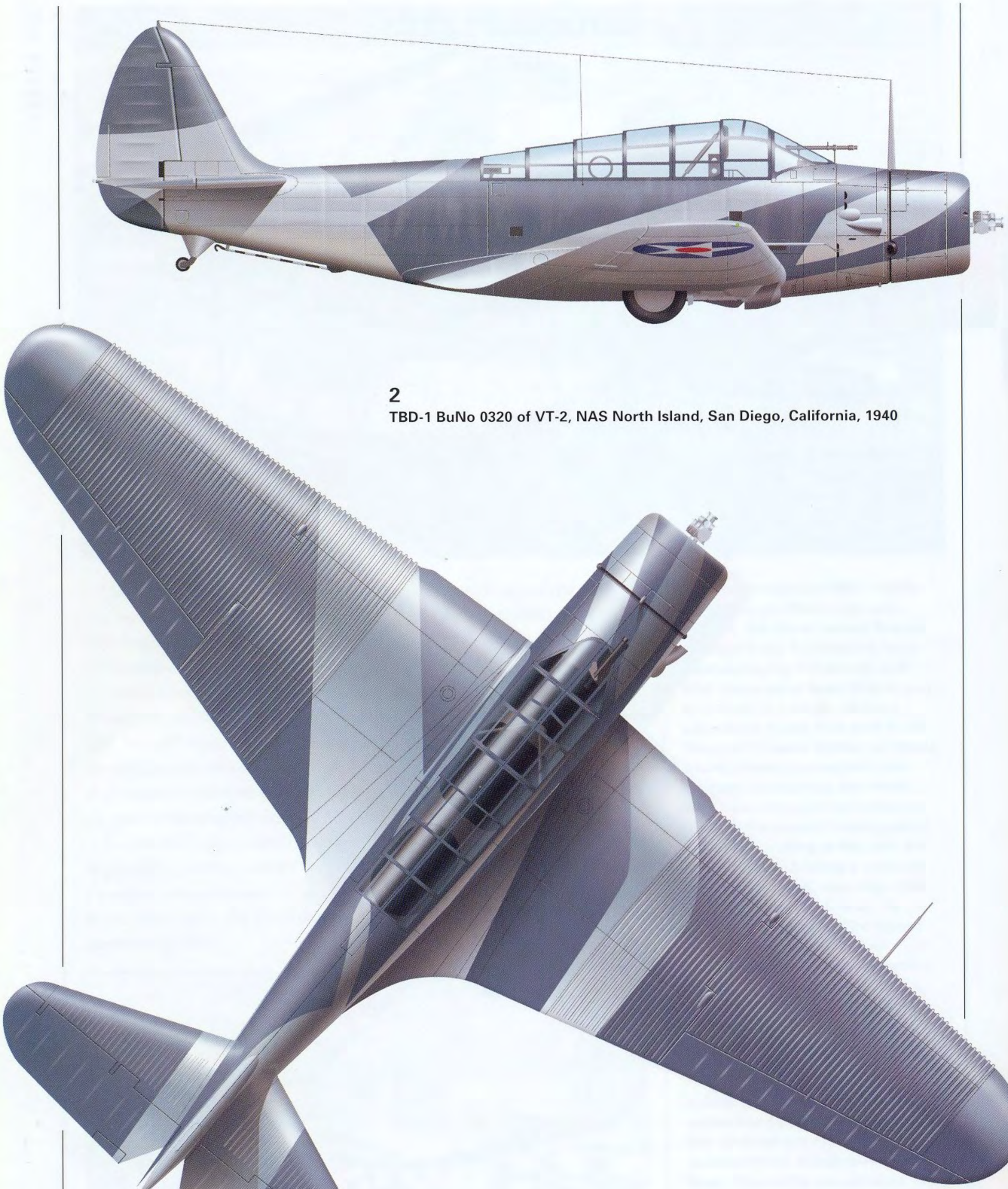
The first production TBD-1 (BuNo 0268) was modified as the sole TBD-1A, the Naval Aircraft Factory situated in the Philadelphia Navy Yard equipping the aircraft with EDO Corporation floats (the largest ever fitted to a single-engined aeroplane). It was then sent to the Newport Torpedo Station on Rhode Island, where it served as a test platform, conducting trial drops with both inert and live torpedoes from 1939 onwards. Photographed soon after starting in this role, the aircraft is seen bearing a series of unusual markings, including a full-length black datum line on the fuselage and cowling. The legend '2XD11' indicates that it is an Experimental Squadron 2 aircraft assigned to the 1st Naval District. Note the specially-marked Bliss-Leavitt Mk 13 torpedo carried by the already running TBD-1A (*via Norman Polmar*)

Aircraft handlers move the boarding ladder into position so that the pilot and observer can man the TBD-1A at Quonset Point, Rhode Island Naval Base. This facility was situated within Coasters Harbor, which was a protected stretch of water ideally suited to torpedo testing (*H S Gann via the Naval Aviation Museum*)

COLOUR PLATES

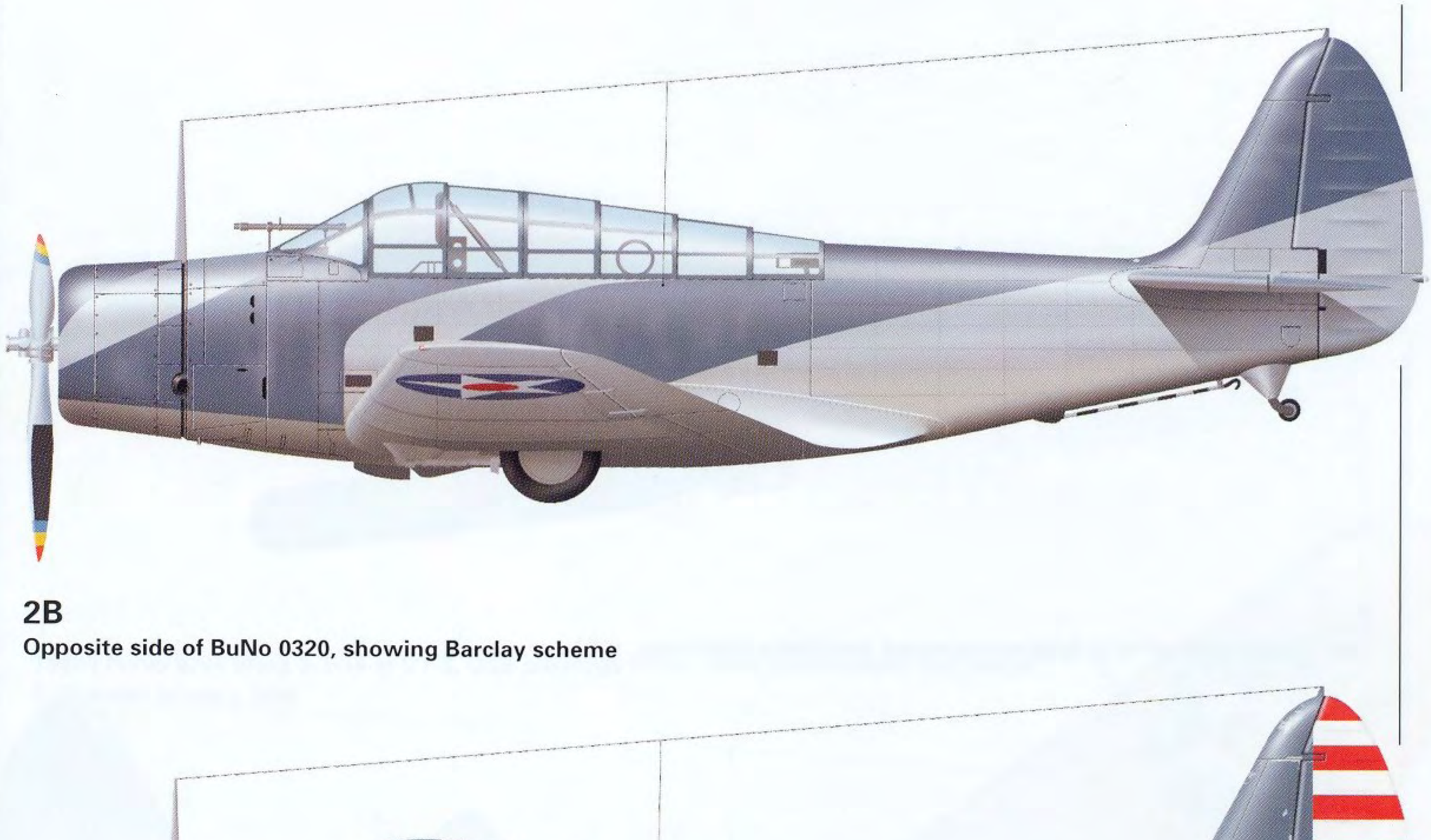
1
TBD-1 BuNo 0300 Black/White 2-T-1 of Lt Cdr W Sinton, CO of VT-2, USS *Lexington*, San Diego, California, early 1938

1A
Top view of BuNo 0300



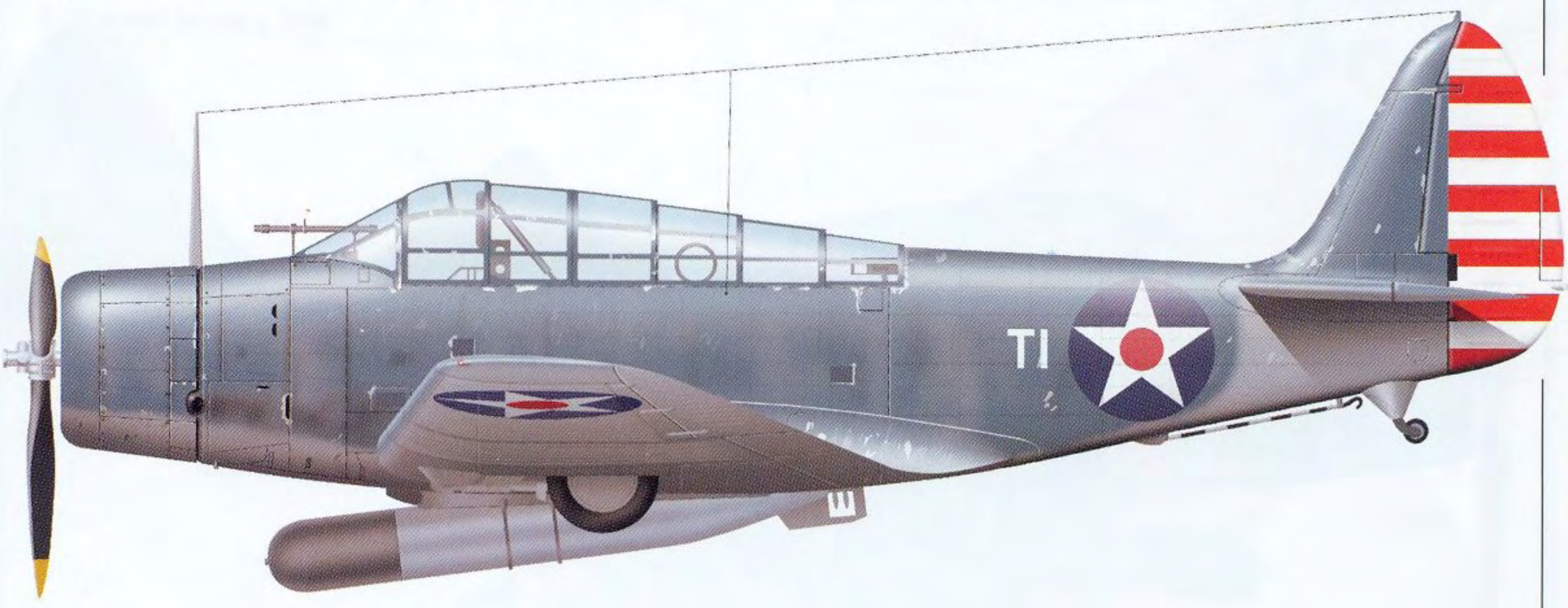
2
TBD-1 BuNo 0320 of VT-2, NAS North Island, San Diego, California, 1940

2A
Top view of BuNo 0320



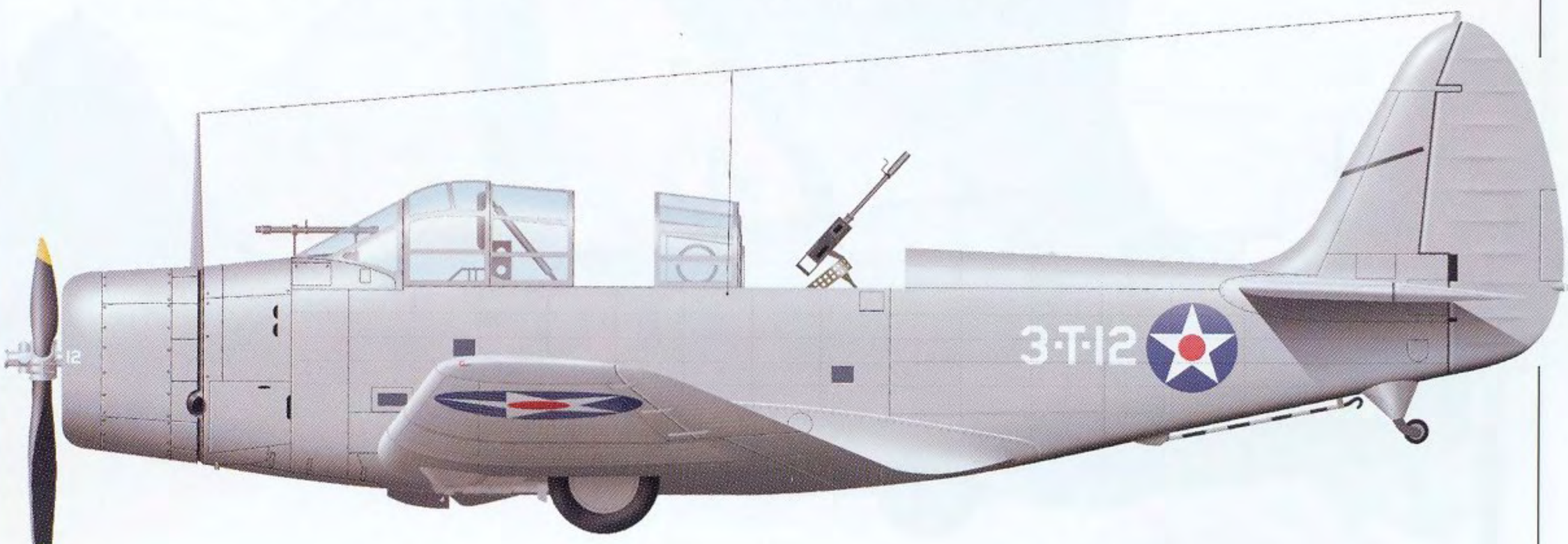
2B

Opposite side of BuNo 0320, showing Barclay scheme



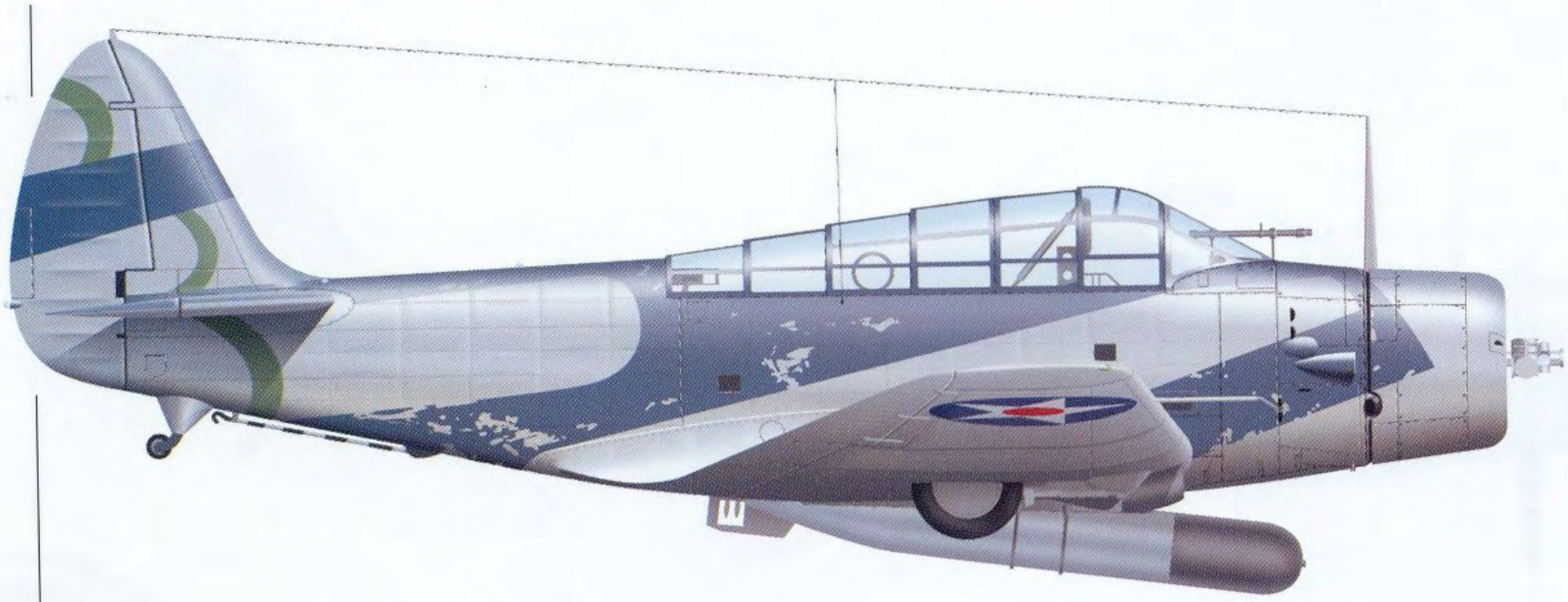
3

TBD-1 White T1 of Lt Cdr James Brett, CO of VT-2, USS *Lexington* (CV-2), May 1942

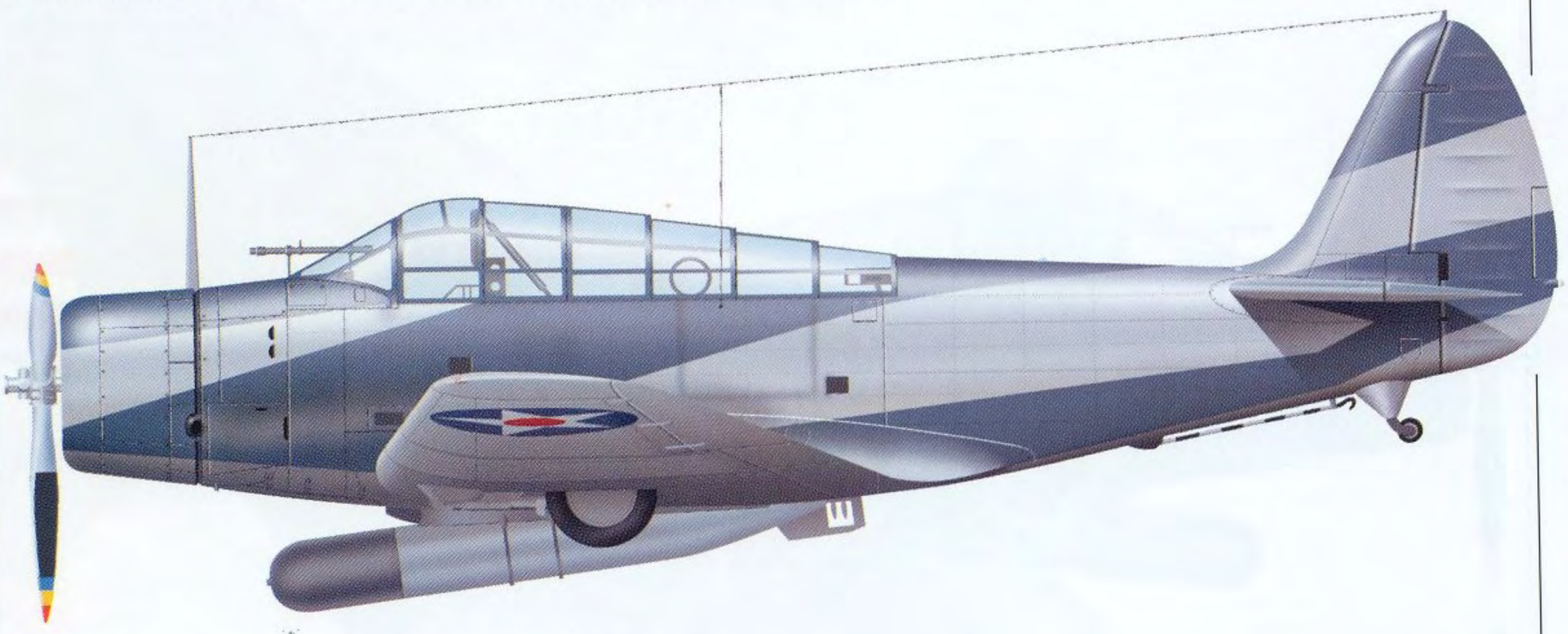


4

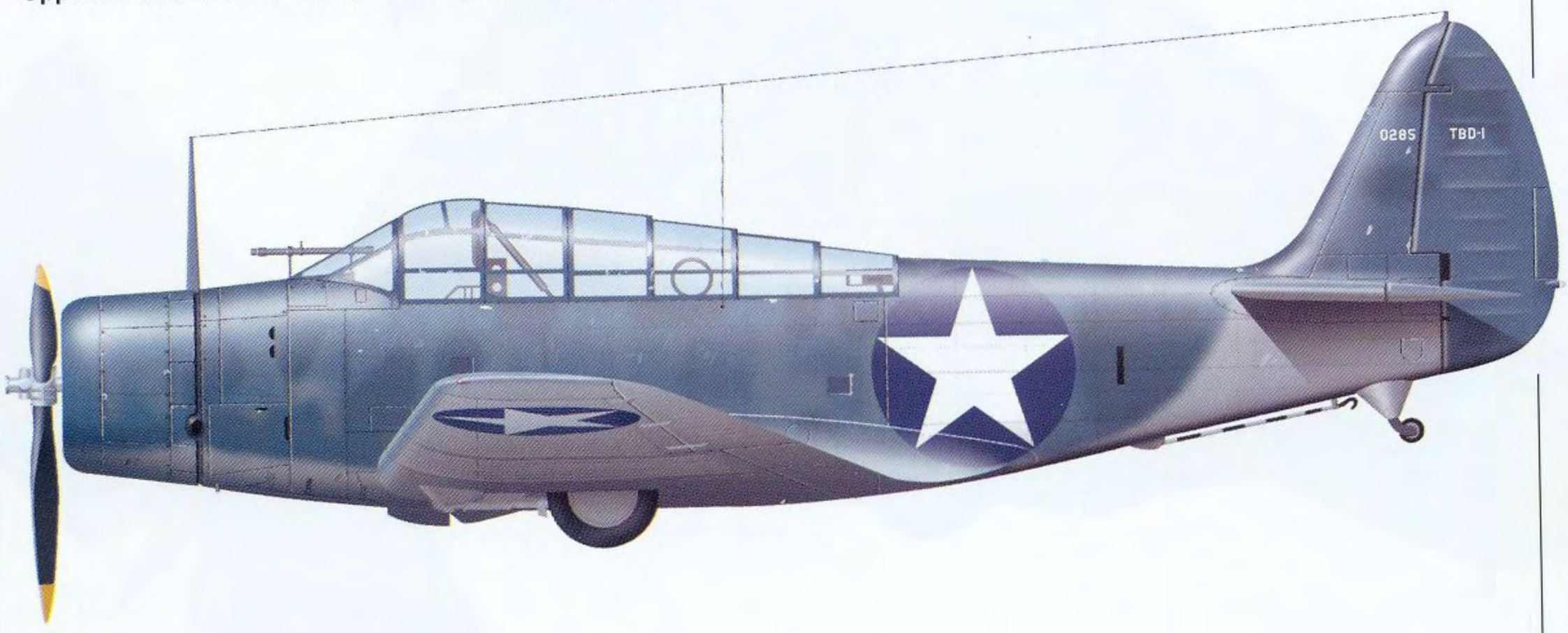
TBD-1 White 3-T-12 of VT-3, USS *Saratoga* (CV-3), 1940-41



5
TBD-1 BuNo 0339 of VT-3, NAS North Island, San Diego, California, 1940



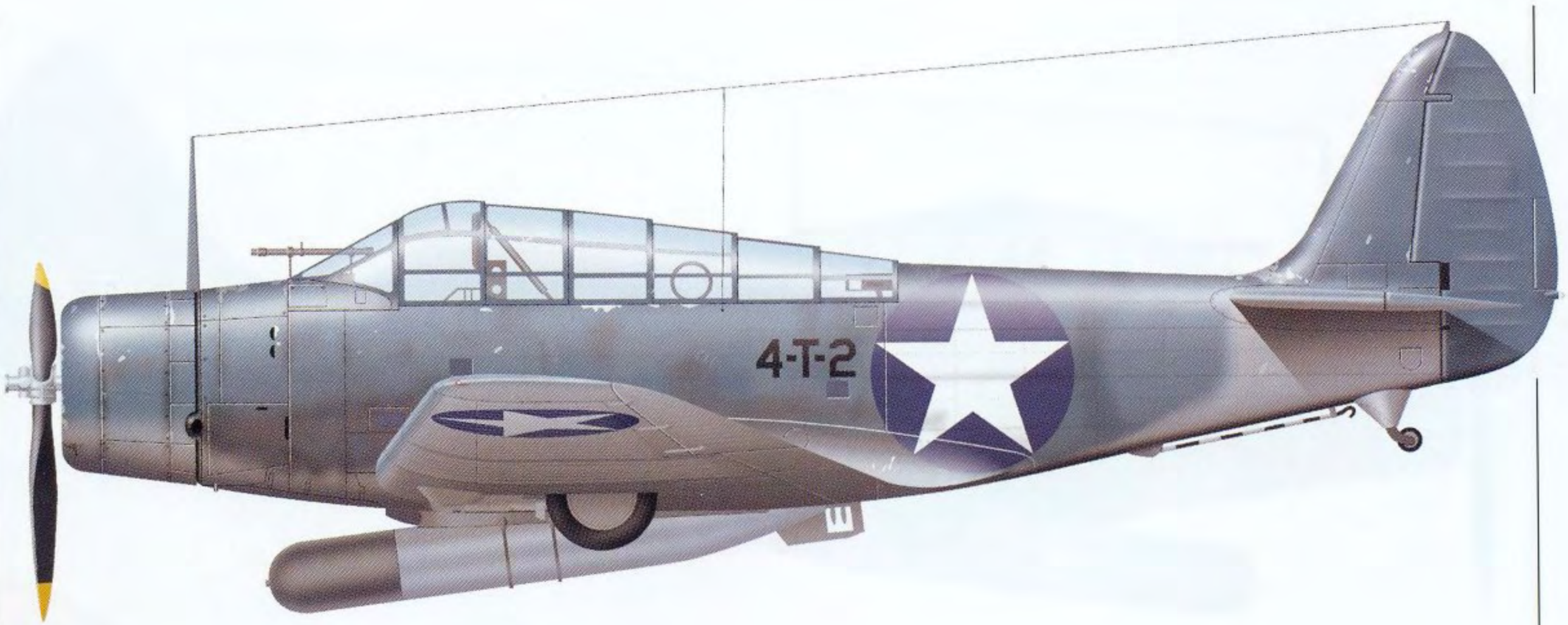
5A
Opposite side of BuNo 0339, showing Barclay scheme



6
TBD-1 BuNo 0285 Black 1 of Lt Cdr Lance E Massey and ACRM L E Perry, VT-3, USS *Yorktown* (CV-5), 4 June 1942

7
TBD-1 BuNo 0294 Black 3-T-14 of VT-3, USS *Saratoga* (CV-3), NAS North Island, San Diego, California, January 1938

7A
Top view of BuNo 0294

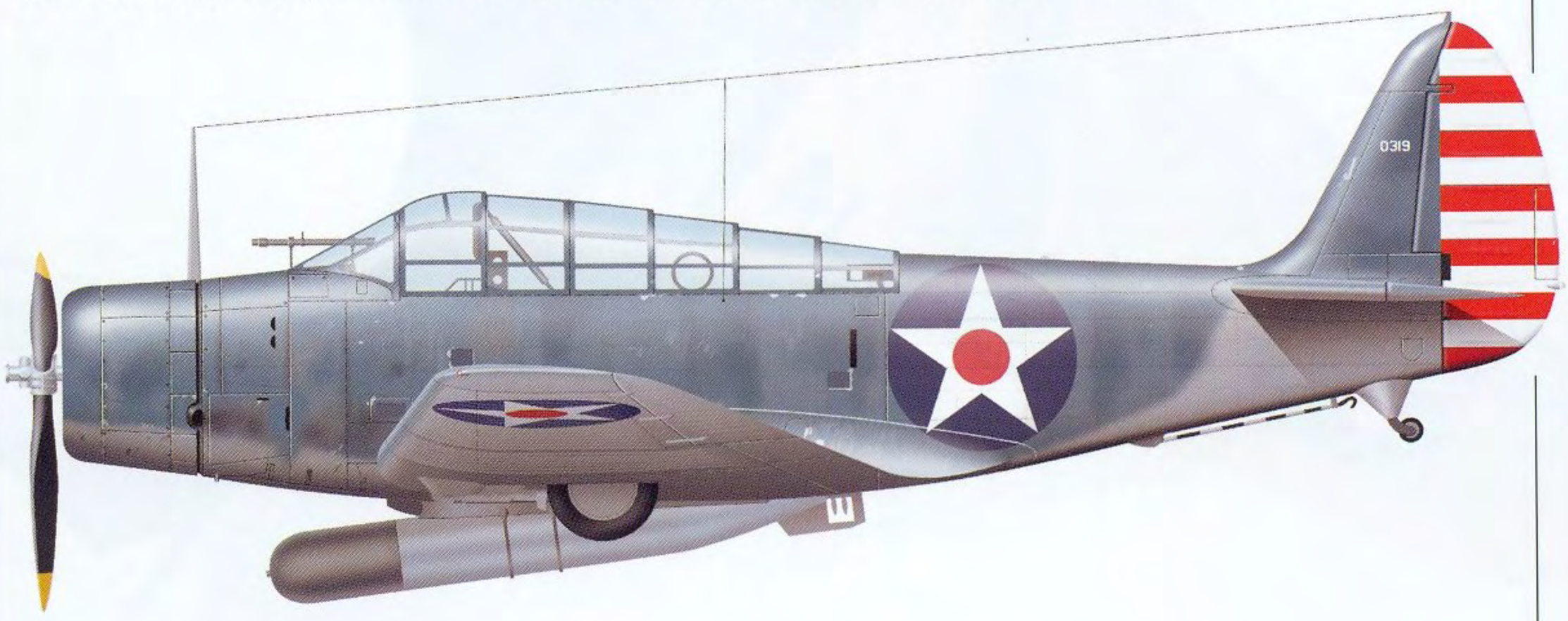


8

TBD-1 Black 4-T-2 of VT-4, USS *Ranger* (CV-4), 1942

9

TBD-1 BuNo 0331 Black/White 5-T-7 of VT-5, USS *Yorktown* (CV-5), NAS Norfolk, Virginia, summer 1938

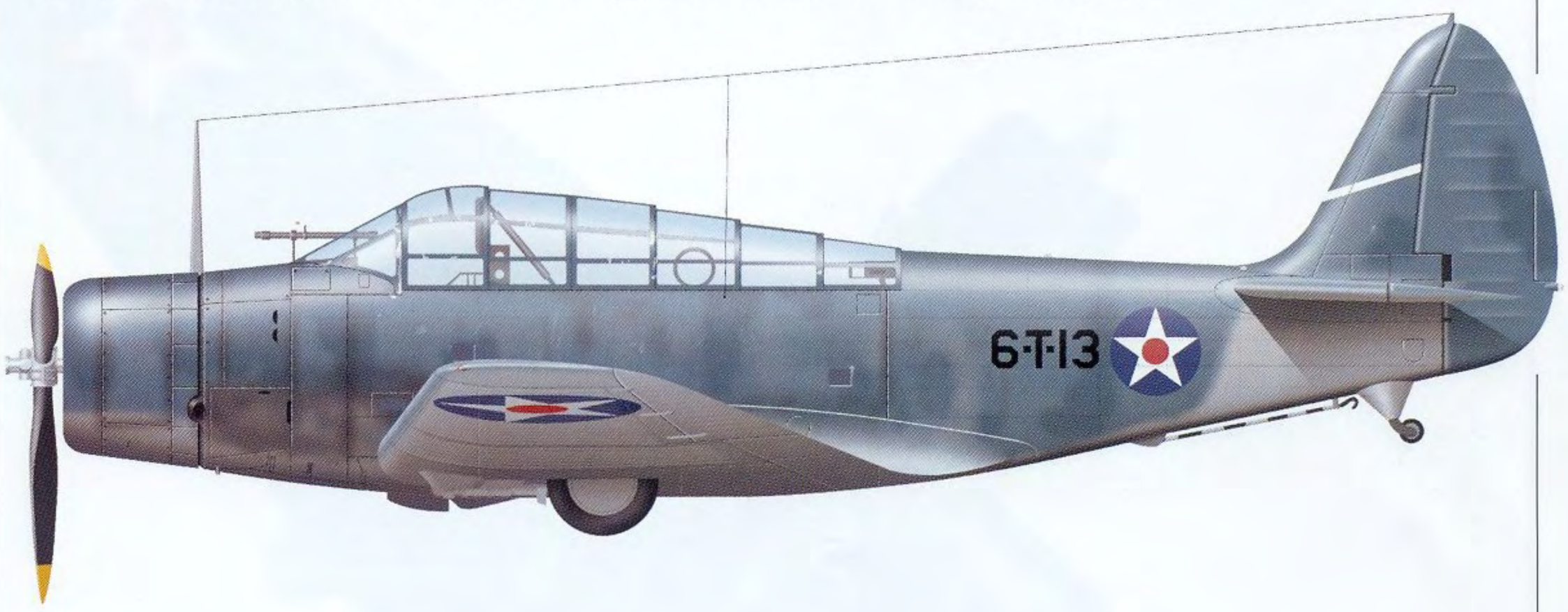


10

TBD-1 BuNo 0319 Black 1 of Lt Cdr J F Taylor and CRM H S Nobbs, VT-5, USS *Yorktown* (CV-5), March 1942

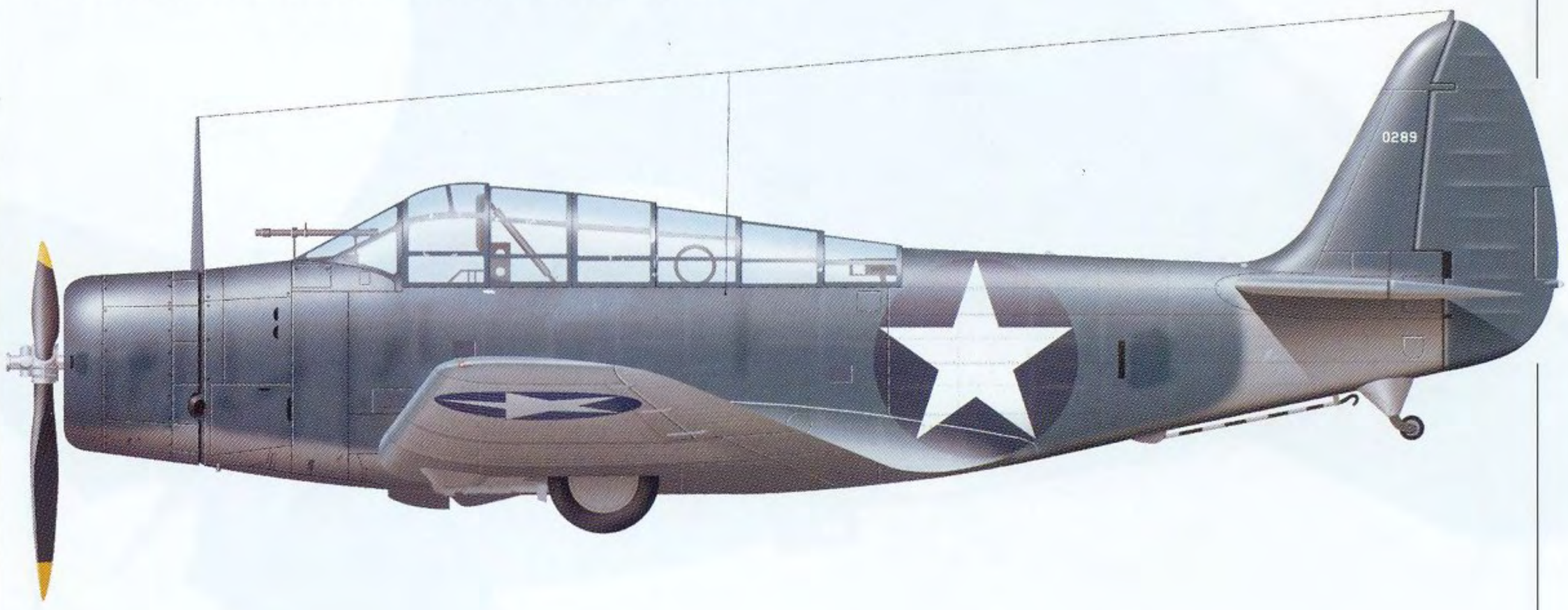
11

TBD-1 BuNo 0327 Black 6-T-6 of VT-6, USS *Enterprise* (CV-6), NAS Norfolk, Virginia, May 1938



12

TBD-1 Black 6-T-13 of VT-6, USS *Enterprise* (CV-6), late 1941

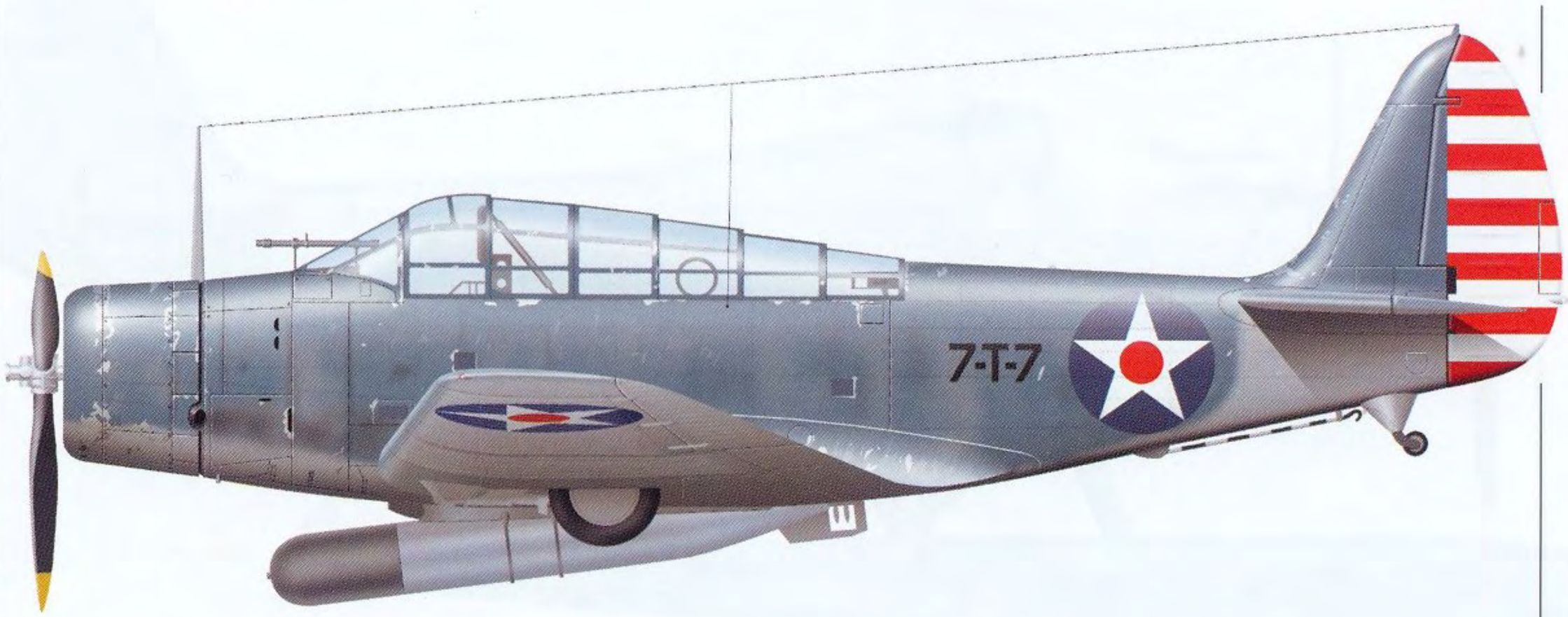


13

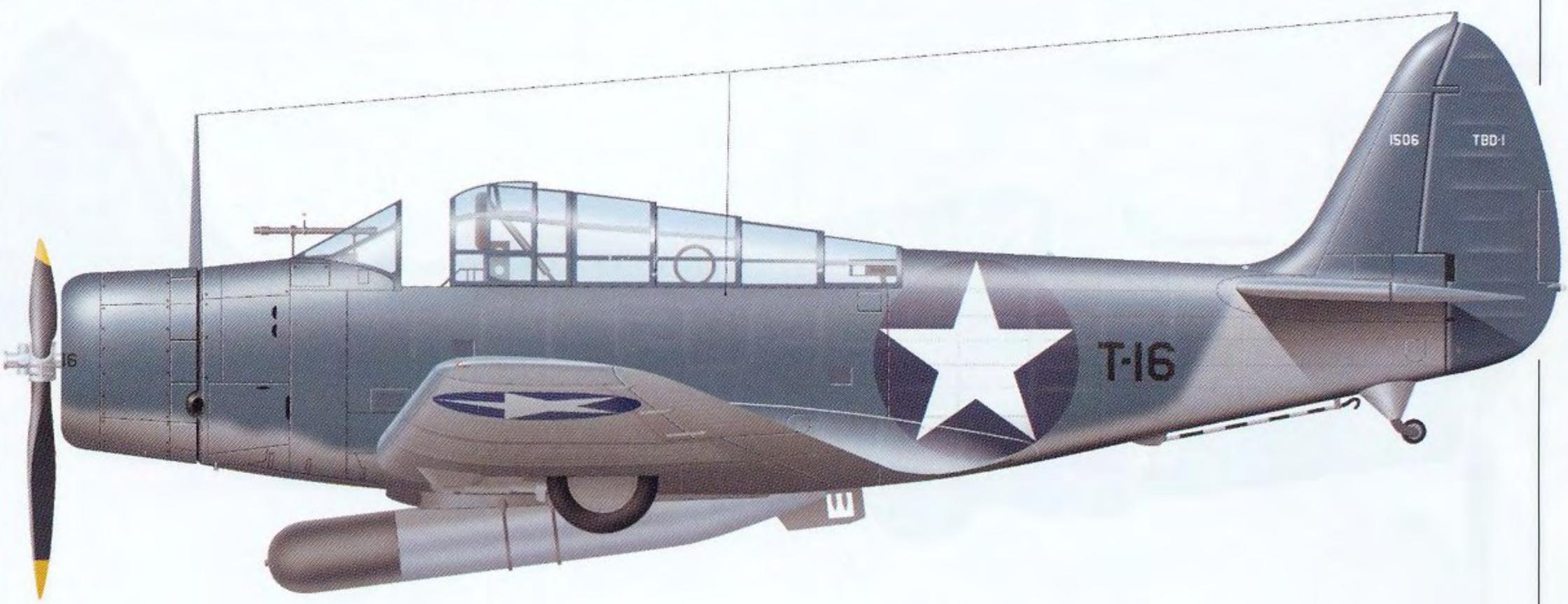
TBD-1 BuNo 0289 Black 1 of Lt Cdr E E Lindsey and ACRM C T Grenat VT-6, USS *Enterprise* (CV-6), 4 June 1942

14
TBD-1 Black 8 of VT-6, USS *Enterprise* (CV-6), April 1942

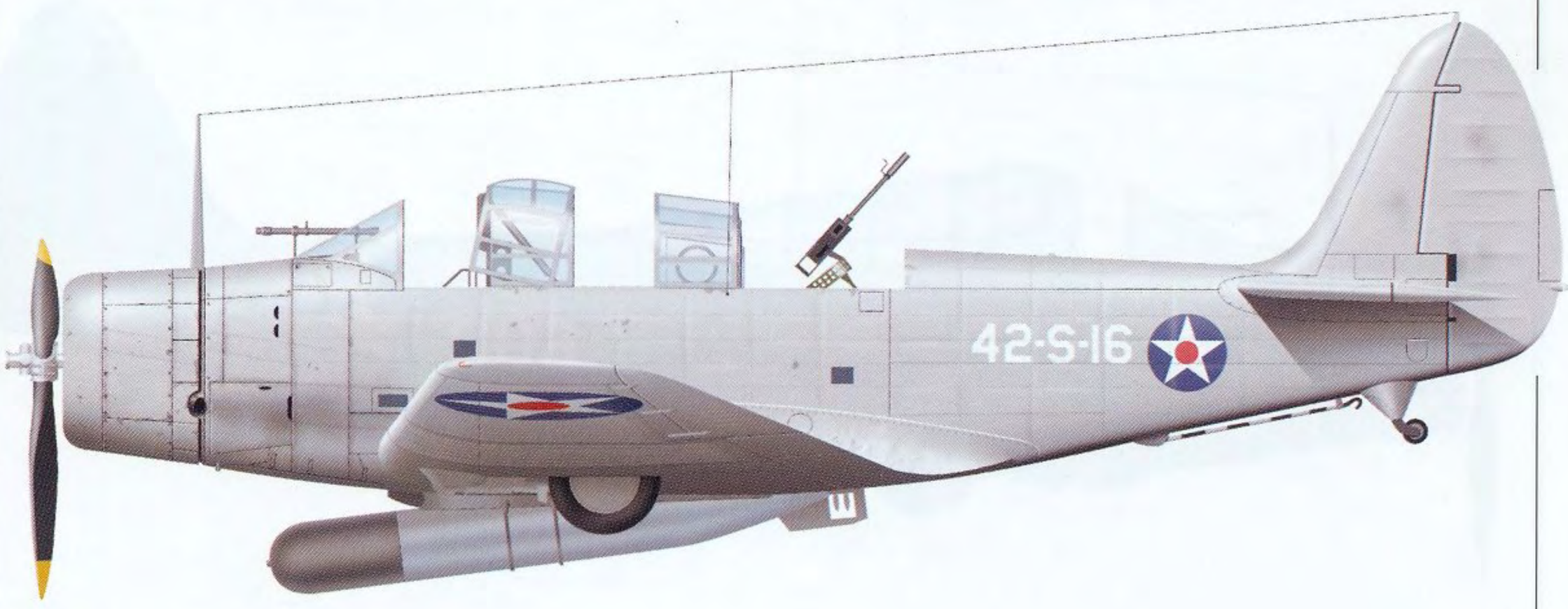
14A
Top view of Black 8



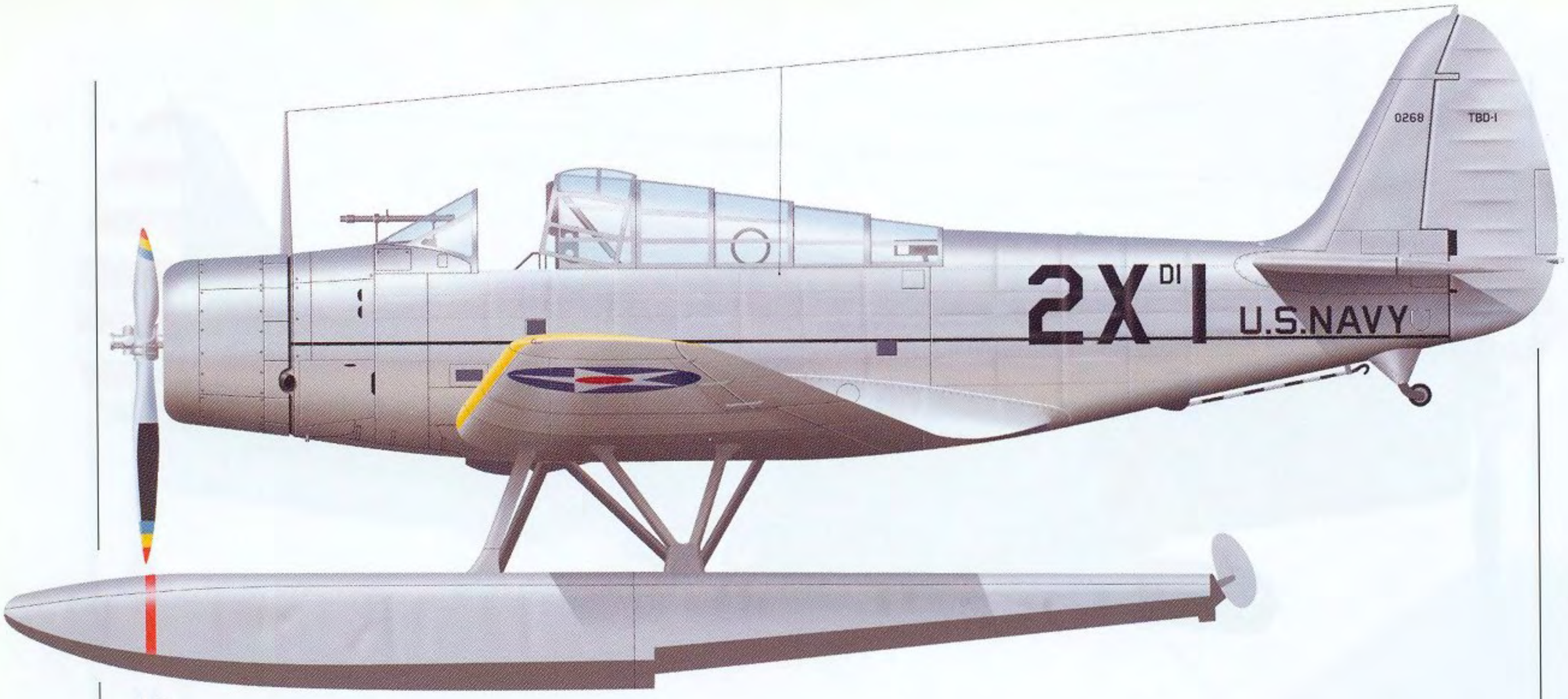
15
TBD-1 Black 7-T-7 of VT-7, USS *Wasp* (CV-7), Scapa Flow, March 1942



16
TBD-1 BuNo 1506 Black T-16 of Lt Cdr J C Waldron and ACRM H F Dobbs, VT-8, USS *Hornet* (CV-8), 4 June 1942

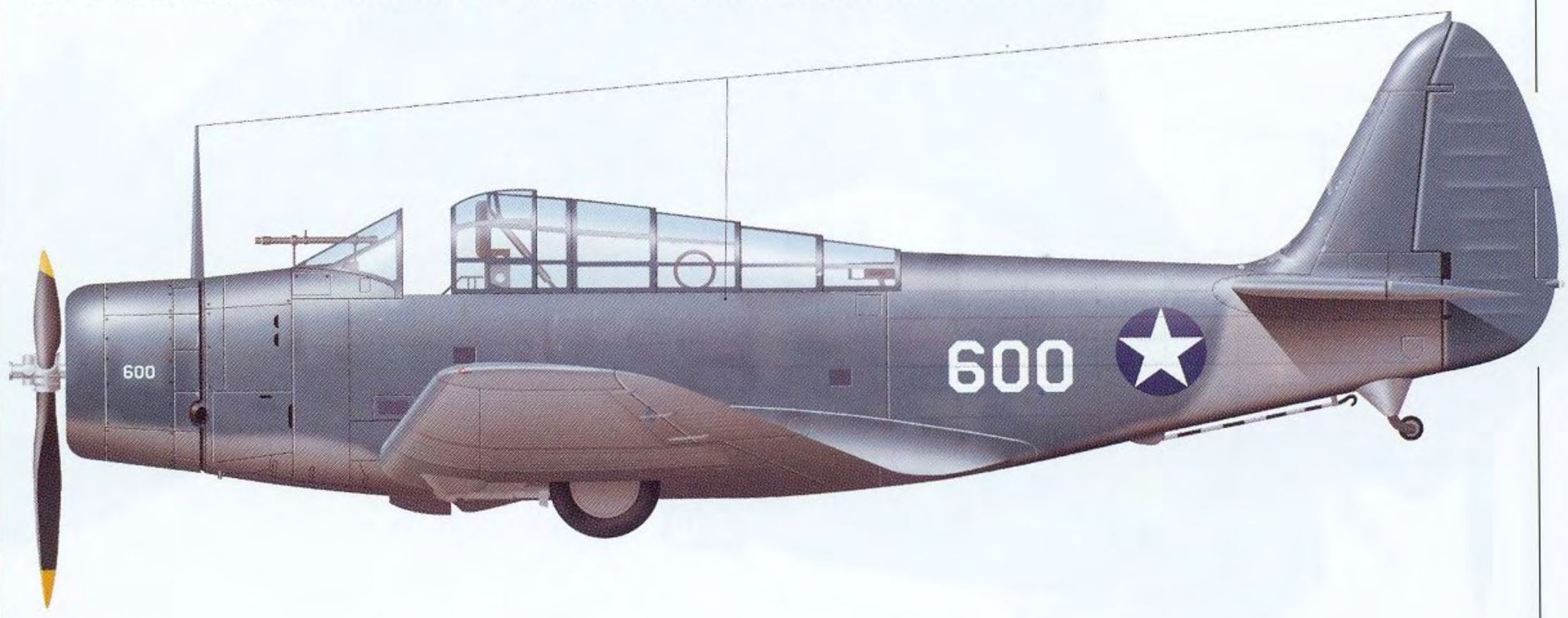


17
TBD-1 White 42-S-16 of VS-42, USS *Ranger* (CV-4), NAS Norfolk, Virginia, 1941

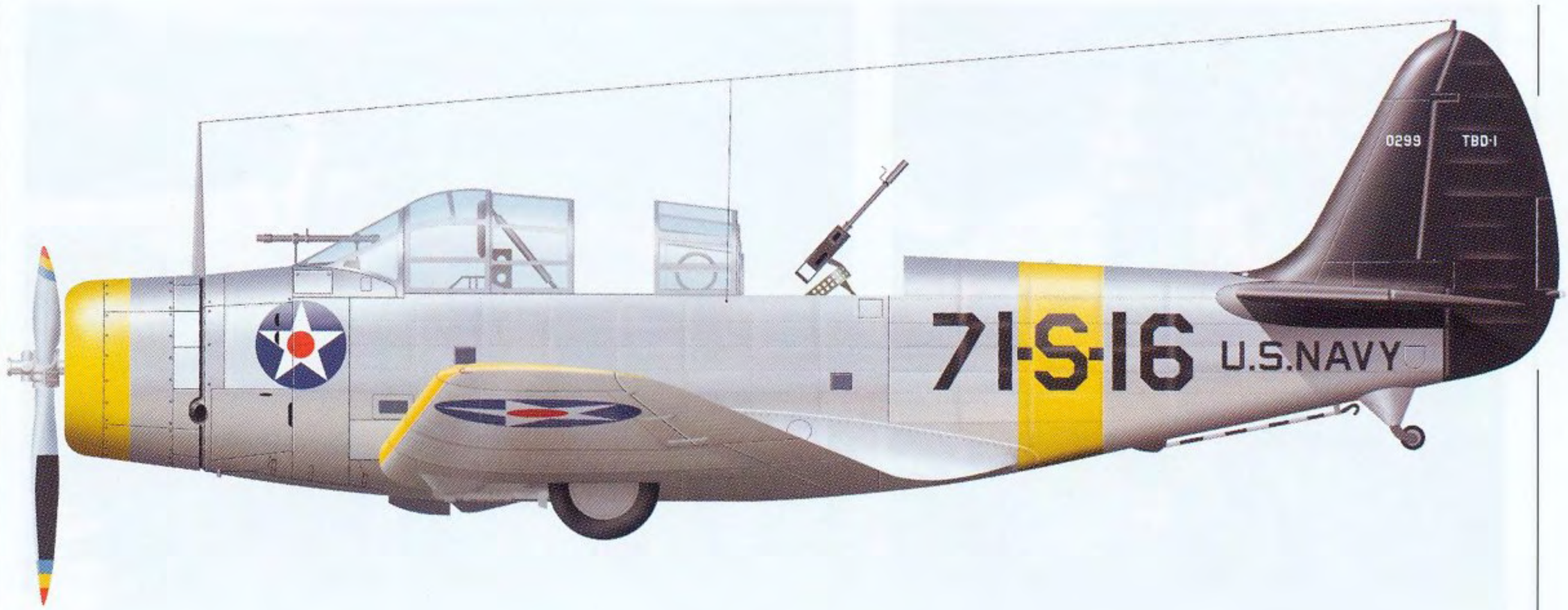


18
TBD-1A BuNo 0268 Black 2X^{D1}1 of Naval Torpedo Station, Newport, Rhode Island Naval Base, 1939

19
TBD-1 BuNo 0358 Black 78 of Naval Air Training Command, NAS Pensacola, Florida, 1939

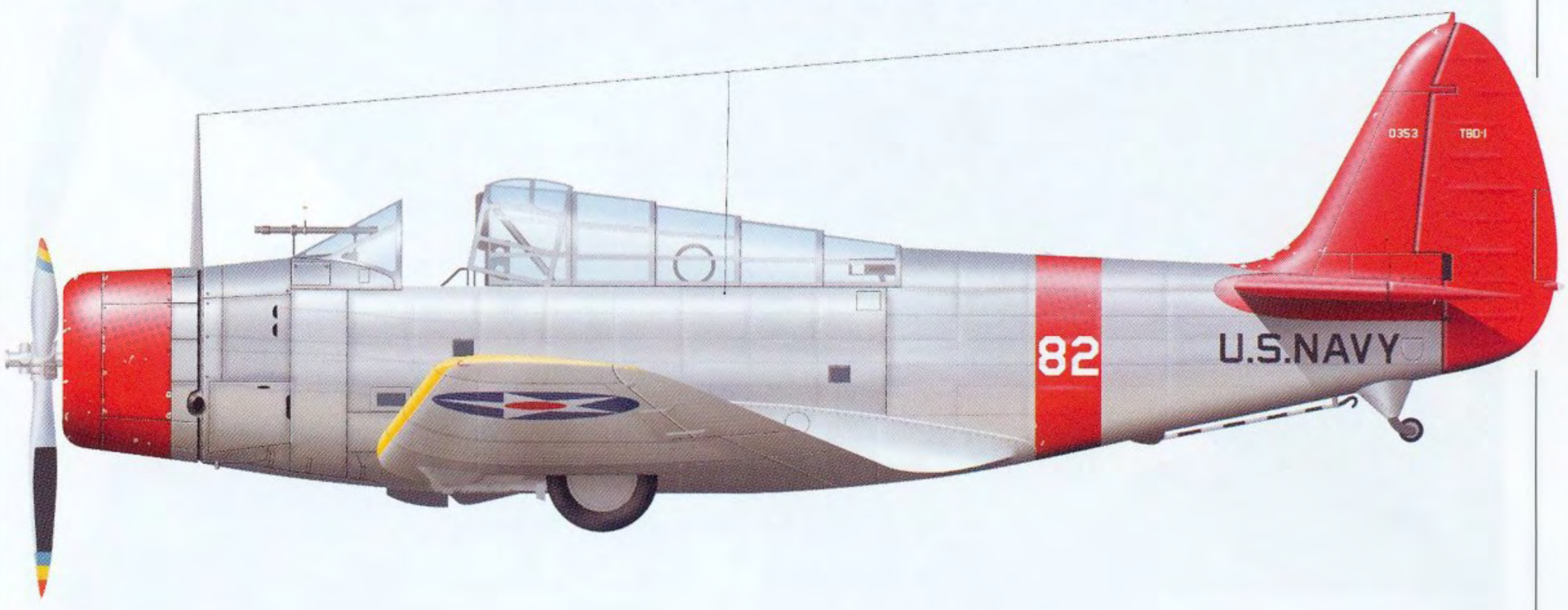


20
TBD-1 White 600 of Naval Air Training Command, NAS Corpus Christi, Texas, early 1943



21

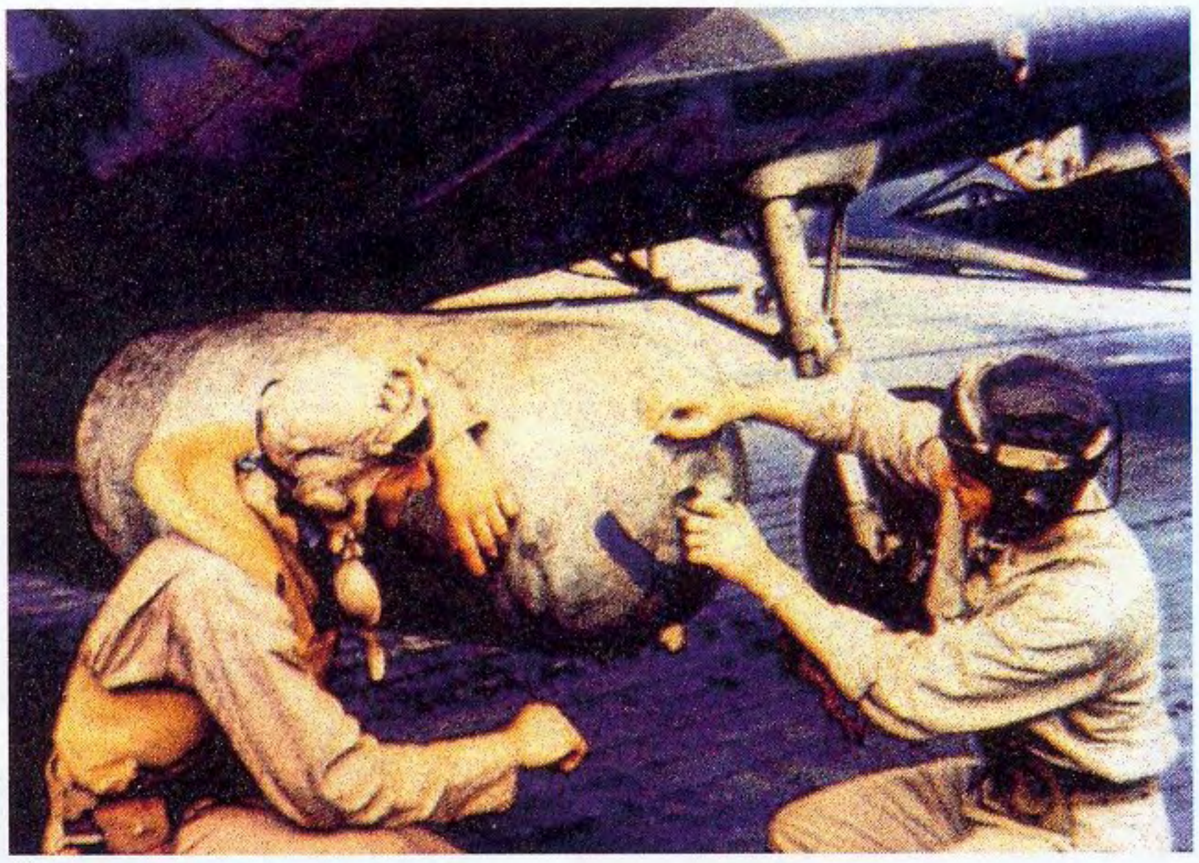
TBD-1 BuNo 0299 Black 71-S-16 of Lt B V Clark and RM1/c H G Bradshaw, VS-71, USS *Wasp* (CV-7), Atlantic, June 1941



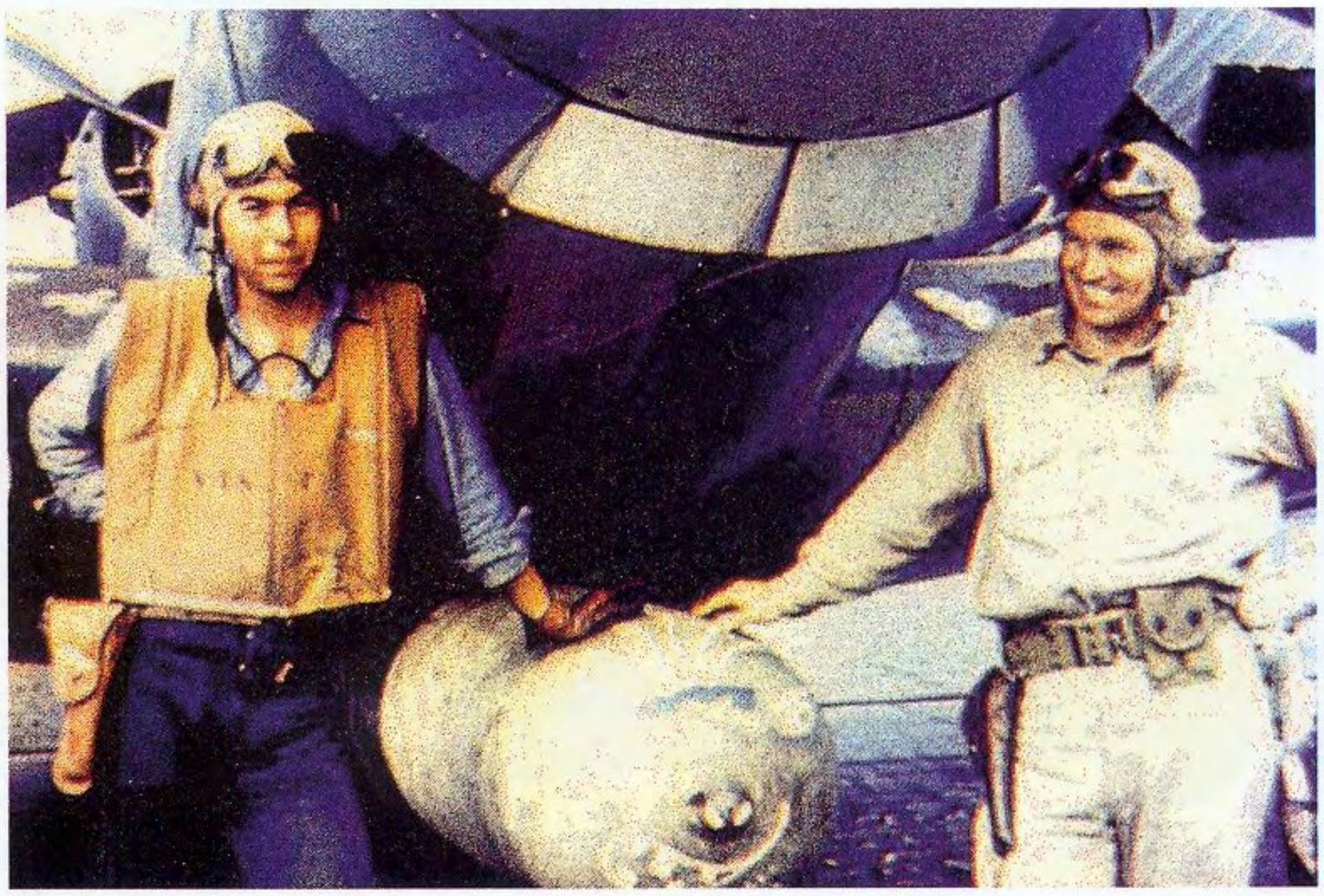
22

TBD-1 BuNo 0353 White 82 of Naval Air Training Command, NAS Pensacola, Florida, circa 1940

1

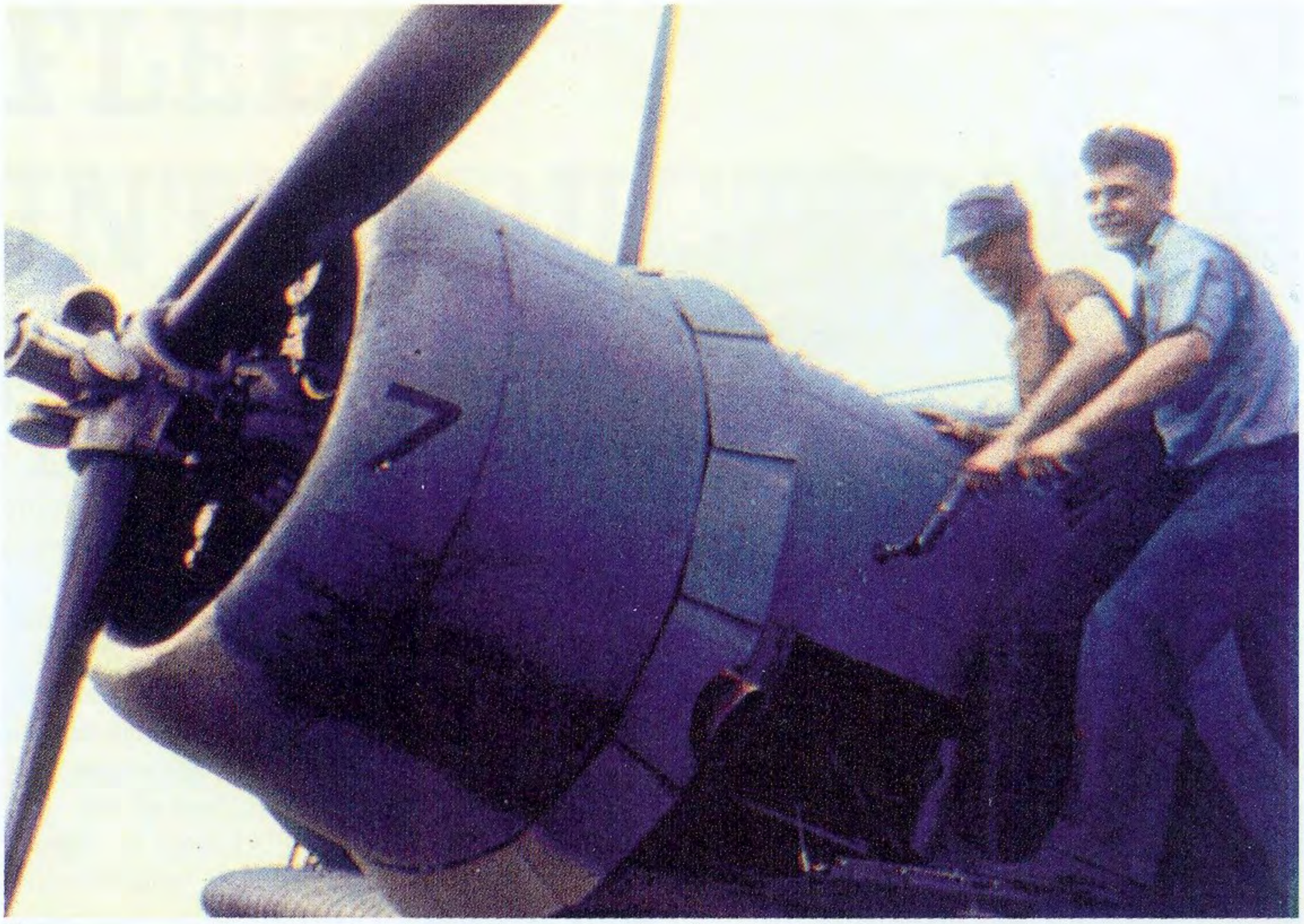


2



3

4



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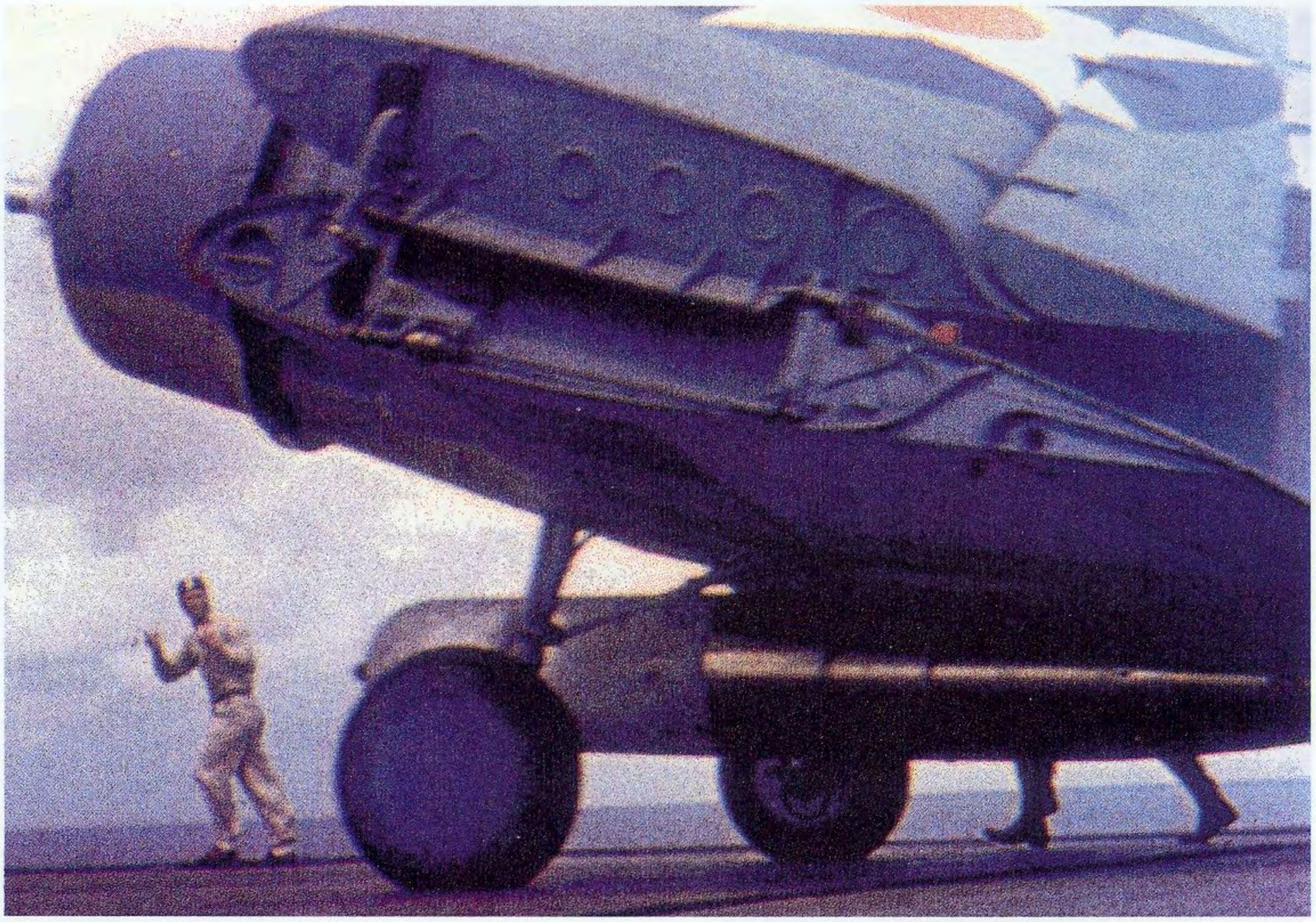
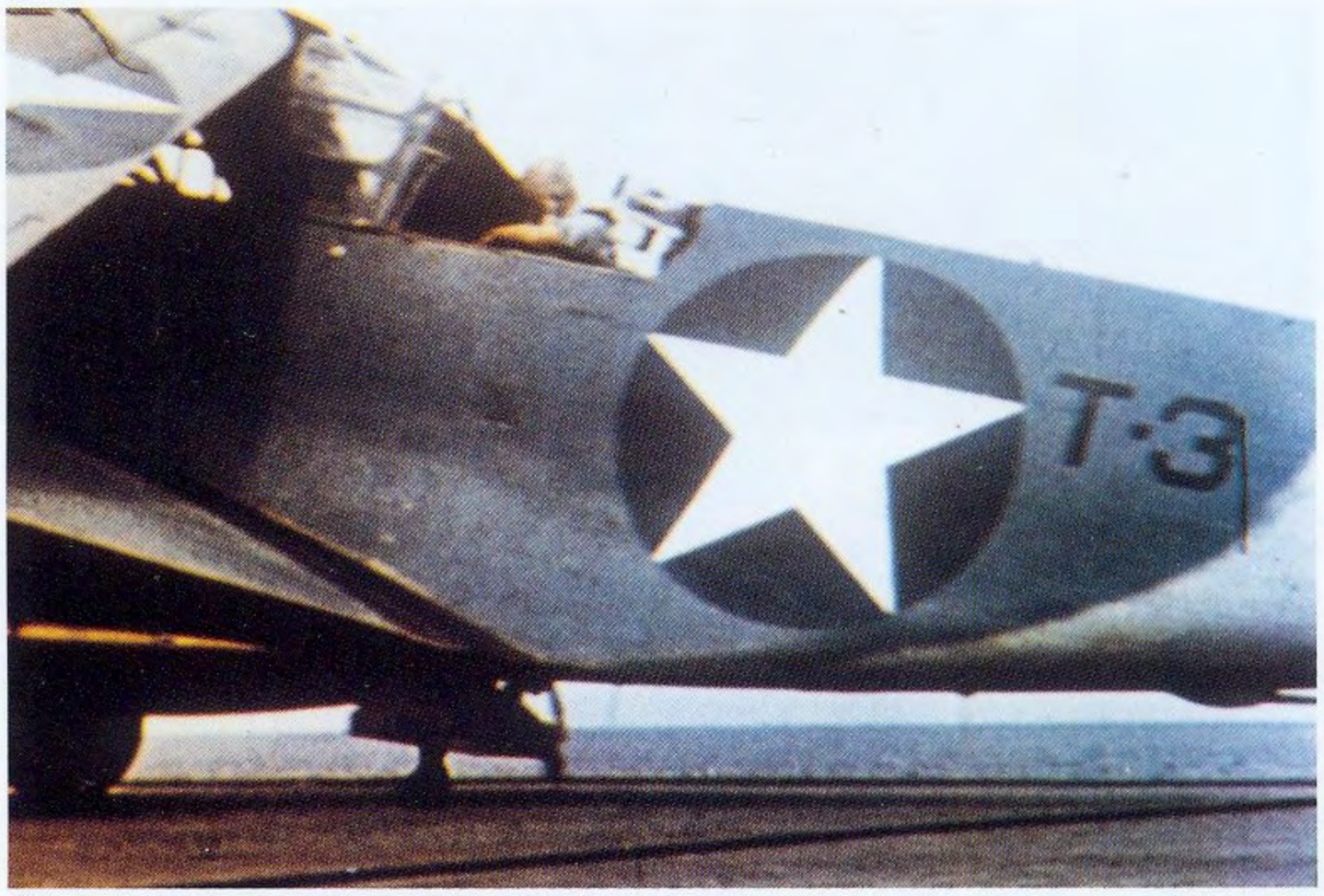


6

7



8

9

FLEET INTRODUCTION

The summer of 1937 brought significant change to US naval aviation. On 1 July a revised squadron organisation was activated as VT-1 became VT-2, VT-2B became VT-3 and two new squadrons – VT-5 and -6 – were established. With formalisation of carrier air groups, these squadrons were permanently assigned to *Lexington*, *Saratoga* (CV-3), *Yorktown* (CV-5) and the still incomplete *Enterprise* (CV-6), respectively.

That fall, Lt Cdr M E Crist's Torpedo Three at NAS San Diego, California, began receiving the first complement of TBD-1s – 20 aircraft between October 1937 and February 1938. Lt Cdr W Sinton's Torpedo Two, also at San Diego, accepted 24 aircraft beginning in December 1937. On the East Coast, VT-5 and -6 received 18 each from February through to April 1938, the latter commensurate with Enterprise's commissioning. April was also the month in which TBD deliveries peaked at 24 aircraft. By July 1938 VT-5, under Lt Cdr J E Craig, and VT-6, under Lt Cdr W B Ault, were fully up to strength and operating from *Yorktown* and 'The Big E'. Only *Ranger* (CV-4), built without torpedo magazines, lacked a 'TorpRon' at that time.

The Douglas Aircraft plant at Santa Monica, California, in January 1938 puts the finishing touches on Torpedo Squadron Two's original aircraft. Nearest the camera is 2-T-1 (BuNo 0300), with USS *Lexington's* yellow tail and the red fuselage band identifying the leader of the first section, who was also the squadron commander. Note the Czechoslovakian-registered DC-3 and Army Air Corps B-18A being assembled at the far end of the factory (*via Michael O'Leary*)

Original TBD Unit Assignments

Contrary to some reports, aircraft were not always assigned sequentially to their original squadrons. The following compilation was assembled by W T Larkins and J A Morrow using Douglas records. Replacement aircraft for early losses were 0370 (3-T-10) and 0378 (6-T-14), whilst nine new TBDs (BuNos 0350-0358) went directly to Pensacola for advanced training of student naval aviators. Production continued, with 15 other aircraft delivered from June to October 1939, for a total of 130.

2-T-1	0300	3-T-1	0279	5-T-1	0377	6-T-1	0322
2-T-2	0297	3-T-2	0271	5-T-2	0338	6-T-2	0323
2-T-3	0296	3-T-3	0274	5-T-3	0339	6-T-2	0324
2-T-4	0299	3-T-4	0275	5-T-4	0319	6-T-3	0325
2-T-5	0295	3-T-5	0276	5-T-5	0320	6-T-5	0326
2-T-6	0294	3-T-6	0277	5-T-6	0321	6-T-6	0327
2-T-7	0298	3-T-7	0278	5-T-7	0331	6-T-7	0329
2-T-8	0293	3-T-8	0270	5-T-8	0332	6-T-8	0330
2-T-9	0292	3-T-9	0273	5-T-9	0333	6-T-9	0331
2-T-10	0309	3-T-10	0280	5-T-10	0316	6-T-10	0340
2-T-11	0306	3-T-11	0281	5-T-11	0317	6-T-11	0341
2-T-12	0305	3-T-12	0282	5-T-12	0318	6-T-12	0342
2-T-13	0308	3-T-13	0283	5-T-13	0334	6-T-13	0343
2-T-14	0304	3-T-14	0284	5-T-14	0335	6-T-14	0344
2-T-15	0303	3-T-15	0285	5-T-15	0336	6-T-15	0345
2-T-16	0307	3-T-16	0286	5-T-16	0315	6-T-15	0346
2-T-17	0302	3-T-17	0287	5-T-17	0314	6-T-17	0347
2-T-18	0301	3-T-18	0288	5-T-18	0313	6-T-18	0348

Aside from filling out air groups' strike complements, the TBD brought other advances to naval aviation. Its greatest effect was to introduce American aircraft carriers to the monoplane age. Current fighters were the biplane Grumman F2F/F3F series and the Boeing F4B, while scout-bombers of a similar configuration included Curtiss BFCs and Vought SU and SBU models, plus Martin BM variants. However, the fleet's first monoplane scout-bomber arrived two months after VT-3 accepted its first TBDs when, at the end of 1937, Bombing Three was equipped with Vought SB2U-1s. The navy's first operational monoplane fighter finally appeared in December 1939 when Brewster's F2A-1 joined VF-2 – three months after World War 2 had begun in Europe! The last Grumman biplanes were only replaced by Wildcats in 1940.

TRAINING AND READINESS

The standard pre-war complement for carrier squadrons was 18 primary aircraft plus two or three spares. Torpedo squadrons ('TorpRons') typically were led by a lieutenant commander, almost always a graduate of the US Naval Academy at Annapolis, Maryland, with one or two 'bull' lieutenants, perhaps four lieutenants junior grade and eight to ten

Photographed on 25 January 1939, BuNo 302 was delivered as 2-T-17 to USS *Lexington's* VT-2, complete with squadron markings applied at the factory and covers for the canopy and engine (*Harry S Gann via the Naval Aviation Museum*)

ensigns. Torpedo squadrons, because of the requirement for a 'second pilot' who doubled as bombardier, also had at least three non-commissioned aviators designated Naval Aviation Pilots (NAPs).

Tactical organisation was based on the three-aeroplane section (a leader and two wingmen), with two sections per six-aeroplane division. Despite peacetime training at squadron strength, wartime operations necessarily were more limited owing to pressing maintenance requirements and/or attrition. No TBD squadron ever launched more than 15 aircraft on a combat mission, and the average was 12. Ordinarily, the commanding officer led the first six-aeroplane division and his 'exec', the senior lieutenant, led the second. However, some NAPs were so experienced that they were capable of leading divisions.

Pre-war training allotments typically ran to 30 to 35 hours per pilot per month, but second pilots in torpedo squadrons seldom got that much 'stick time'. Although carrier qualified, their actual carrier experience was, according to one veteran, that they rarely flew as first pilots (front seaters) other than for utility missions such as target towing. Instead, the NAPs more often served within the squadron according to their primary rating – machinist, radioman or ordnanceman.

With the advent of war in 1939, training was taken more seriously. Second pilots began flying tactical missions, and non-aviators largely replaced them in the bombardier's role.

A VT-2 NAP was AMM2c Thomas F Cheek, who recalls;

'The VT units spent a negligible time on gunnery training – horizontal bombing was the major practise, with the NAP co-pilot performing the

role of bombardier. Lack of gunnery training by all rear-seat men (torpedo, bombing and scouting) was very evident.

'As demonstrated by the Army Air Force at Midway, horizontal bombing was a lost cause from the beginning. Hits were fairly easy if the target was unmoving on land, or a towed sled or vessel that maintained a fixed course and speed. We tried a variety of formations and patterns, with sorry results, but the powers that be kept us trying.

'Simulated torpedo runs were seldom carried out other than during fleet problems or local manoeuvres. Once a year each pilot was to make a live drop, with a dummy head on a real torpedo. There was no practise scheduled using cement logs such as evolved later. We made no drops in 1939. In 1940 we made two dry runs on a regular target towed by a mine sweeper or tug, then the big day, taking off from North Island with a Mk 13 hanging out of the bomb-bay!

'On the first live drop I flew with my regular crew, AC Weddel in the front seat. His run in was well within limits, 90 knots and 100 ft, and the "fish" dropped clean. It ran true for the first 100-150 yards, then veered 60 degrees to port and took off over the surface like a happy trout. My drop emulated Weddel's at the start, then veered slightly starboard with a dead bead on the minesweeper. Thankfully, instead of frolicking over the surface, it ran true to depth and passed under the tug.

'From the "scuttlebutt" going the rounds at Pearl, ours was not an isolated incident with torpedo drops. All the available evidence is that the Bureau of Ordnance and Bureau of Aeronautics had more than adequate warning as to what was going to sea as torpedo armament.'

Cheek subsequently transitioned to fighters and flew Brewster Buffaloes in *Lexington's* 'Flying Chiefs', Grumman Wildcats in VF-6 and then joined Lt Cdr J S Thach's VF-3 in time for the Midway battle. He was subsequently commissioned and retired in 1956 as a full commander.

In 1937 the TBD represented the cutting edge of carrier aircraft design, and as such it required some adjustment. More complex than its predecessors, the big Douglas had its share of problems owing to relatively sophisticated systems such as retractable landing gear and power folding wings. Flying the TBD took some adjustment for most pilots too, as Cdr Cheek reflects;

'One thing I'll not forget was the TBD had a sneaky stall. The LSO could seldom detect if a pilot very slowly eased his throttle back. When this happened near the ramp, a bit of turbulence was enough to start the TBD into a level, sinking stall – the engine lacked the power to save it. It happened to VT-6's Lt Cdr Lindsey and others. Weddel, whom I flew with most of the time, floated into the barrier on his first qual landing. He growled, but I called him on his power-on approached more than a few times.'

All TBD units had to cope with such idiosyncrasies. Reported VT-3;

'It is still questionable whether or not the first week's flying (in TBDs) is a pleasure or just a lot of constant concern over heat control, wheels, flaps and numerable other new gadgets.'

Saratoga's torpedo pilots also remarked;

'In a hangar flying session the old matter of the increasing number of gadgets came up. It was remarked that the TBD landing check-off list was impossibly long, and that a warning light is used to indicate when the

Torpedo Two's third section is seen in line abreast formation during early 1938. The section leader's aircraft – 2-T-7 – sports the full-circle blue cowling band and fuselage stripe, while the second aeroplane – 2-T-8 – has an upper half cowling band, and the third aircraft – 2-T-9 – is further identified by the lower half cowling band. The wing upper surfaces are painted chrome yellow, with blue chevrons and large black aircraft numbers repeated inboard of the chevrons (*William T Larkins via the Naval Aviation Museum*)

5-T-7 (BuNo 0331) was assigned to the leader of VT-5's third section, and duly carried a section leader's fuselage band in True Blue. Note also the Battle E (awarded to the pilot for excellence in bombing and gunnery) on the TBD-1's fuselage, forward of which is the unit badge. Seen in flight over southern California in early 1940, BuNo 0331 flew with VT-5 from 1938 through to 1941, when it was transferred to VT-7, aboard *Wasp*. Having survived fleet service, the aircraft served as a trainer at the Naval Proving Ground at Dahlgren, in Virginia, until it was finally scrapped in August 1944 (*via Peter Mersky*)

This photograph was taken on the same sortie as the previous shot, and shows 5-T-7 leading 5-T-8 (BuNo 0332) and 5-T-9 (BuNo 0333). All three aircraft have red tails (USS *Yorktown's* assigned colour), with wing chevrons and cowl bands in True Blue (VT-5's third section colour). BuNo 0332 transferred to VT-6 soon after this photograph was taken, and was subsequently written off on 3 June 1940 when it stalled after receiving a wave-off whilst attempting to recover aboard *Enterprise* (*via Martin Bowman*)

One of Torpedo Three's TBDs at Oakland, California, in July 1938. This view shows the wing fold mechanism to advantage, with wing tips nearly meeting over the canopy. VT-3's distinctive emblem (a red sea dragon entwined around a black torpedo) is painted below the cockpit. The aircraft's propeller tips are red, yellow and blue (*William T Larkins via the Naval Aviation Museum*)

wheels are not down for landing. One pilot suggested that such a warning light might be used in connection with all the devices used in preparation for landing . . . a gadget to check gadgets.'

Although such 'gadgets' were not adopted, they might have helped. Torpedo Three noted in July 1938 that one of its 'oldest and best pilots' was taxying clear of *Saratoga's* Fly Three area when he pushed the landing gear valve instead of the wing fold lever. 'The behemoth settled on the deck with all the grace of a circus elephant standing on its head', the squadron reported. However, damage was limited to the propeller, with wings and fuselage practically undamaged, although 'the pilot's face turned the colour of a stop light'.

BuNo 0275 was the a section leader's aircraft from VT-3's second section. Later transferred to VT-2, this aircraft was one of 13 TBD-1s lost on 8 May 1942 when USS *Lexington* was sunk on the final day of the Battle of the Coral Sea (*via Michael O'Leary*)

Torpedo Three conduct flight operations aboard USS *Saratoga* (CV-3) during 1938. As the first squadron to receive TBDs, Lt Cdr M E Crist's unit probed the new aircraft's capabilities during extensive evaluations at NAS San Diego that began in the fall of 1937. However, this period was not without casualties, for VT-3 lost five aircrew in two TBD crashes during the summer of 1938 (*USN via the Naval Aviation Museum*)

Serious losses were avoided until the second half of 1938, when eight TBDs were destroyed or damaged beyond repair. Torpedo Three and Five each lost three aircraft to a variety of causes between June and November – unlocked wings, mid-air collisions, ramp strikes and just plain crashes. But that was the worst period of operational losses until 1941. After six months of flying the TBD, *Lexington's* VT-2 reported in August 1938 that they were 'thoroughly sold on the plane', which received an 'up' rating from every standpoint;

'As a carrier plane it is very satisfactory, being steady in the groove and maintaining good aileron control at low speeds. It has taken all landings without failure, and takes off the carrier easily with maximum allowable gross weight conditions of landing. The TBD-1 makes excellent "transport landings", going on very smoothly when landed with the tail about five feet in the air. This technique is especially helpful when feeling for the ground at night.'

PREWAR LOSSES

Some 30 TBDs were lost to various causes in the three-and-a-half years between July 1938 and December 1941. Torpedo Two, Three and Six each lost six aircraft, while VT-5 wrote off eight Devastators and VS-71 a pair. This was fairly serious attrition, amounting to more than one aircraft in five. With other Devastators permanently assigned to air stations in the continental US, it left fewer than 100 torpedo aeroplanes for the fleet at the time of the Japanese attack on Pearl Harbour.

The following spread gives a brief summary of all of these accidents, with those aircrew who were killed in the incidents noted being marked with an asterisk when known;

PREWAR LOSSES

23 July 1938	BuNo 0334	VT-5	crashed in Connecticut
Lt J F McDonough*, Lt(jg) W J Drumtra*, AvCad J R Patch*			
28 July 1938	BuNo 0351	VN-4 D8	wing fold on take-off
AvCad L D Lunn*			
29 July 1938	BuNo 0288	VT-3	crashed in San Diego, California
AvCad J A Porter, AMM2c J O Rose*, Sea1c R J Pyffer*			
9 August 1938	BuNo 0309	VT-2	ramp strike
Lt W B Mechling			
15 August 1938	BuNo 0270	VT-3	crashed
AMM2c M F Moscicki*, RM3c D F Smith*, ACOM R T Carter*			
16 August 1938	BuNo 0315	VT-5	mid-air collision, lost at sea
ACM A E Furry, Lt C W Lord, RM1c H Muench*			
27 October 1938	BuNo 0337	VT-5	ramp strike
Lt Cdr J M Craig			
26 November 1938	BuNo 0369	BatFor	crashed in El Paso, Texas
AvCad L T Rowe*, Pvt C K Wise*, Mess Att1c H Willis			
6 January 1939	BuNo 0301	VT-2	barrier crash, DBR
Ens E V Wedell			
17 January 1939	BuNo 0316	VT-5	ditched
Lt Cdr J P W Vest, ACMM E J Williamson, CRM R A Richter			
10 March 1939	BuNo 0322	VT-6	Lost on take-off
ACMM (NAP) F O Adams, crew recovered			
31 July 1939	BuNo 0325	VT-6	crashed, DBR?
AMM2/c (NAP) D E Runyon			
12 January 1940	BuNo 0373	VT-3	mid-air east of San Diego
Ens H N Funk, RM1c J A Crowson*, RM3c E E Jackson			
12 January 1940	BuNo 0292	VT-3	mid-air east of San Diego
Ens W G Barnes Jr, AMM2c P E Dickson, RM2c C W Post			
2 February 1940	BuNo 0287	VT-2	wings folded on launch
Lt L J Stone and crew injured			
3 June 1940	BuNo 0332	VT-6	stalled on wave-off
Ens R M Holder injured			

20 June 1940 Ens L W Antwerp	BuNo 0314	VT-2	engine failure, Hawaii
12 September 1940 Lt P J Riley	BuNo 0330	VT-6	landing at San Diego
21 February 1941 AMM1c (NAP) R M Sherman*	BuNo 1508	VS-71	carrier landing, Cuba
4 March 1941 Lt W A Howland and crew survived	BuNo 0377	VT-2	lost at sea
11 March 1941 Ens W G Barnes, AMM3c R Goff*, AMM3/c D D Daga*	BuNo 0323	VT-3	crashed
17 March 1941 Lt(jg) F M Robinson*, CRM S Knyezsa*, RM2c J S McLendon*	BuNo 0278	VT-5	lost at sea, mid-air
17 March 1941 Ens K L Berry*, AOM3c M O DeJarnett*, RM2c B D Cristman*	BuNo 0380	VT-5	lost at sea, mid-air
16 April 1941 Ens E B Rowley*, Sea1c H J Roy*, RM2c W L Rose*	BuNo 0348	VT-6	crashed in San Diego
21 April 1941 Ens D D Whyte*, ACOM A L Chistensen*, Sea2c M S Starcevich	BuNo 0344	VT-5	lost at sea
29 April 1941 Ens J P French*, Sea1/c T H Rasco*, RM1c R L Martin*	BuNo 0280	VT-2	crashed and burned
23 May 1941 Lt B V Clark*, RM1c H G Bradshaw	BuNo 0299	VS-71	crashed
4 June 1941 Lt Joseph Taylor, one aircrewman lost	BuNo 0359	VT-5	ramp strike
14 June 1941 ACM (NAP) H A Bueller	BuNo 0283	VT-6	lost at sea
6 December 1941 Ens O A Powers	BuNo 0371	VT-3	carrier landing

WARTIME OPERATIONAL LOSSES

10 January 1942 Ens E C Gillen, AOM2/c M V Peters*, Sea2c C B Pierce*	BuNo 0281	VT-3	CV-3 ramp strike
16 January 1942 ACMM Harold Dixon, AOM2/c A J Pastula, RM3c G D Aldrich	BuNo 0335	VT-6	lost at sea

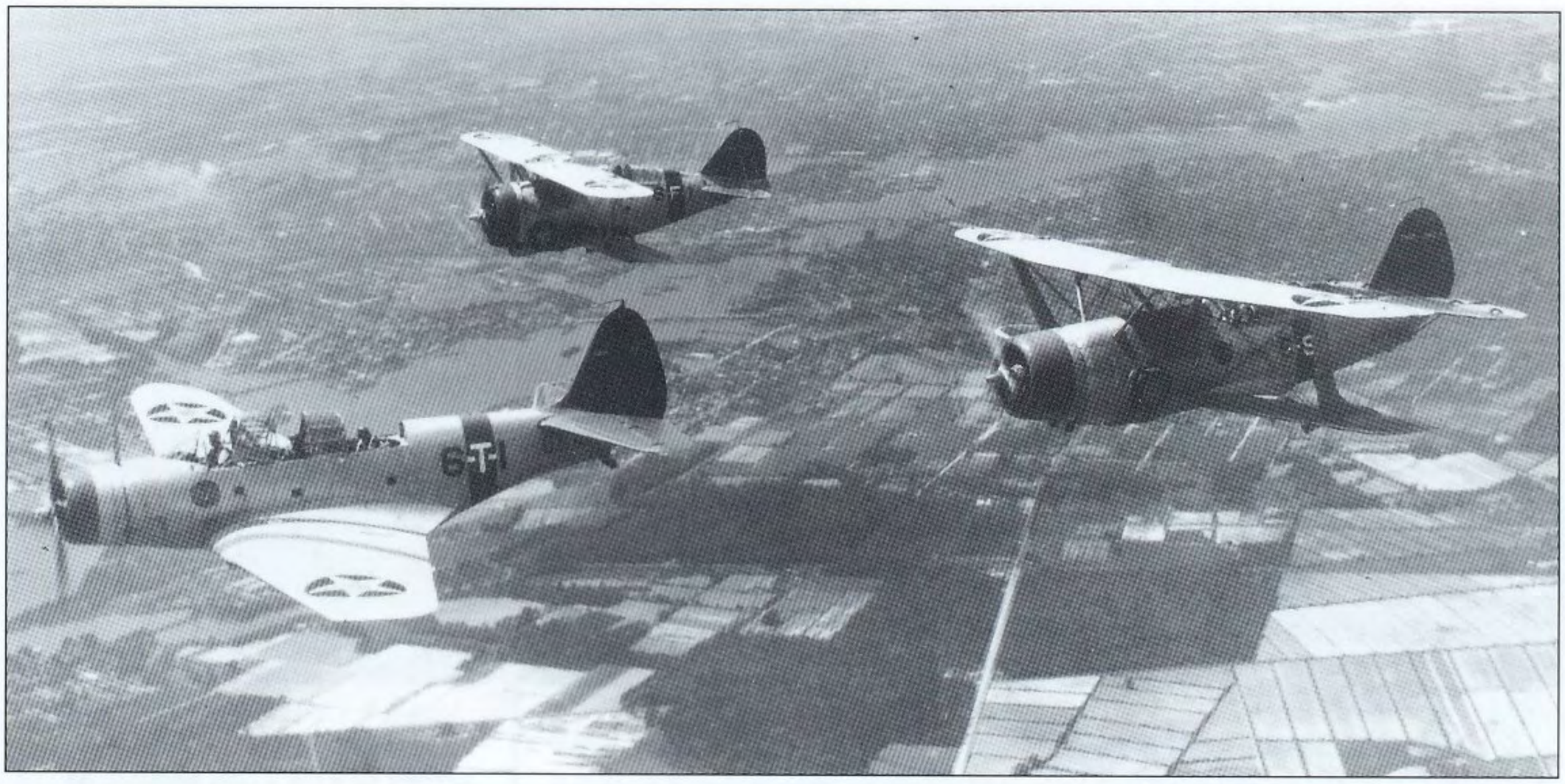
22 January 1942 Ens G Shean, AMM2c L H Castleman	BuNo 0347	ACTG	ditched in Biscayne Bay
18 February 1942 Lt(jg) J T Eversole, AMM2c L C Pederson, RM3c J M Blundell	BuNo 0274	VT-6	ditched out of fuel
28 May 1942 Lt(jg) E V Wedell and crew survived	BuNo 0302	VT-7	crashed in Georgia
28 May 1942 Lt Cdr E E Lindsey, Mach T E Schafer, ACRM C T Grenat	BuNo 0370	VT-6	lost at sea
19 December 1942 Ens Robert Jones and crew survived	BuNo 0282	NAS Miami	crashed out of fuel
24 December 1942 Ens Clark W Miller	BuNo 0350	NAS Miami	ground collision
22 January 1943 Ens Glen Shear	BuNo 0347	NAS Miami	ditched in Biscayne Bay
27 August 1943 Ens D E Brown*, Sea2c H W McCain*	BuNo 0363	NAS Miami	torpedo training
2 September 1943 Ens Bruce T Mallory	BuNo 0353	NAS Miami	ditched

Note that the wartime operational losses listed above do not include aircraft lost to non-combat causes while engaged in offensive missions in the Pacific. Such incidents are described in the text.

OPERATING DOCTRINE

Operating procedures and tactical doctrine evolved in 1937- 38, usually at squadron and air group level. The standard TBD crew consisted of a commissioned naval aviator or non-commissioned Naval Aviation Pilot, with a NAP in the second seat and an enlisted radioman-gunner in the rear cockpit. The NAP could relieve the front seat pilot as required, but

BuNo 0370 belonged to *Saratoga's* VT-3 during 1938-39, arriving as a replacement for 3-T-10 (BuNo 0288) which was lost in a crash at San Diego in July 1938. Subsequently, 0370 went to VT-6 and was assigned as the aircraft of Lt Cdr E E Lindsey, who stalled it and crashed attempting landing aboard *Enterprise* (CV-6) on 28 May 1942 while embarking for the Battle of Midway. Lindsey and his crew were rescued by a destroyer and returned to their carrier, but pilot and gunner were lost in action (flying BuNo 0289) on 4 June (*Douglas Aircraft via the Naval Aviation Museum*)



Modern carrier airpower, April 1938. Three *Enterprise* squadron commanders are seen 'on the wing' over Hampton Roads, Virginia, as the US Navy's newest air group demonstrates its potential. Flying on 6-T-1 are the F3F-2 and SBC-1 assigned to the commanders of Fighting Six and Scouting Six respectively. Missing from the formation was the Northrop BT-1 of Bombing Squadron Six. This particular TBD (BuNo 0322) caught a wingtip after launch in March 1939 and crashed, but the crew was safely recovered (*Fred Dickey Jr via the Naval Aviation Museum*)

the second pilot's primary duties were navigator and bombardier, with the Norden sight installed in the floor of the aircraft.

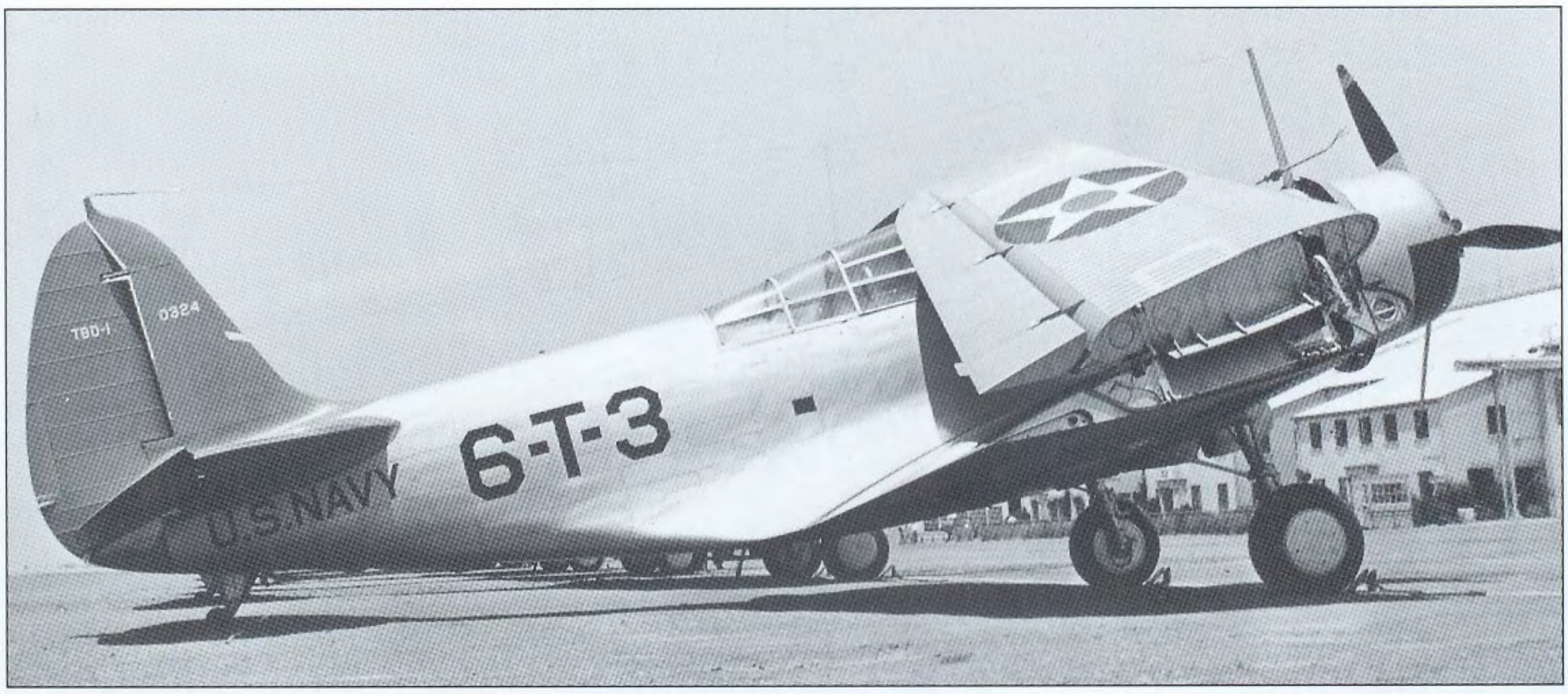
Though most TorpRons flew with full three-man crews during the first five months of hostilities, there were exceptions. For instance, at Coral Sea *Yorktown's* VT-5 dispensed with the second pilot, while *Lexington's* Torpedo Two launched with all seats occupied. None of the three TBD squadrons engaged at Midway used second pilots or observers.

Air group strikes against enemy surface forces typically began with the scout bombers initiating a dive-bombing attack, perhaps with fighters providing flak suppression. The torpedo aeroplanes then initiated their approach, of necessity low and slow in concession to launching parameters of the Mk 13 aerial torpedo. The squadron commander assigned 'plus or minus' increments of five to ten knots or more for each pilot, striving to bracket the target ship's speed as determined by 'seaman's eye'. It was a complex procedure, not well suited to the confusion of combat or the mediocre voice radio of the period.

As war drew nearer in the Pacific, torpedo squadrons assumed wider responsibilities. In early 1941, when a *Lexington* SBD flew into the water after launch, it was discovered that the pilot had logged 110 hours in the previous 30 days. To ease the strain on SBD squadrons, the TorpRons began flying searches, while fighters undertook inner area anti-submarine patrols. During these missions the second pilot or observer rode in the bombardier's position, prone in the belly of the aircraft. The search pattern was 75 nautical miles out, a 25-mile cross leg, and return – three times 'round the course' during a sortie. Torpedo squadrons continued flying searches after hostilities began, and also performed their share of anti-submarine patrols.

'THE MOST BEAUTIFUL AIRCRAFT'

Despite its poor reputation after Midway, the TBD was regarded as a marvel when it appeared in the fleet. One of the more experienced Devastator pilots was Wilhelm G Esders, a non-commissioned flier who recalled his exposure to the big Douglas;



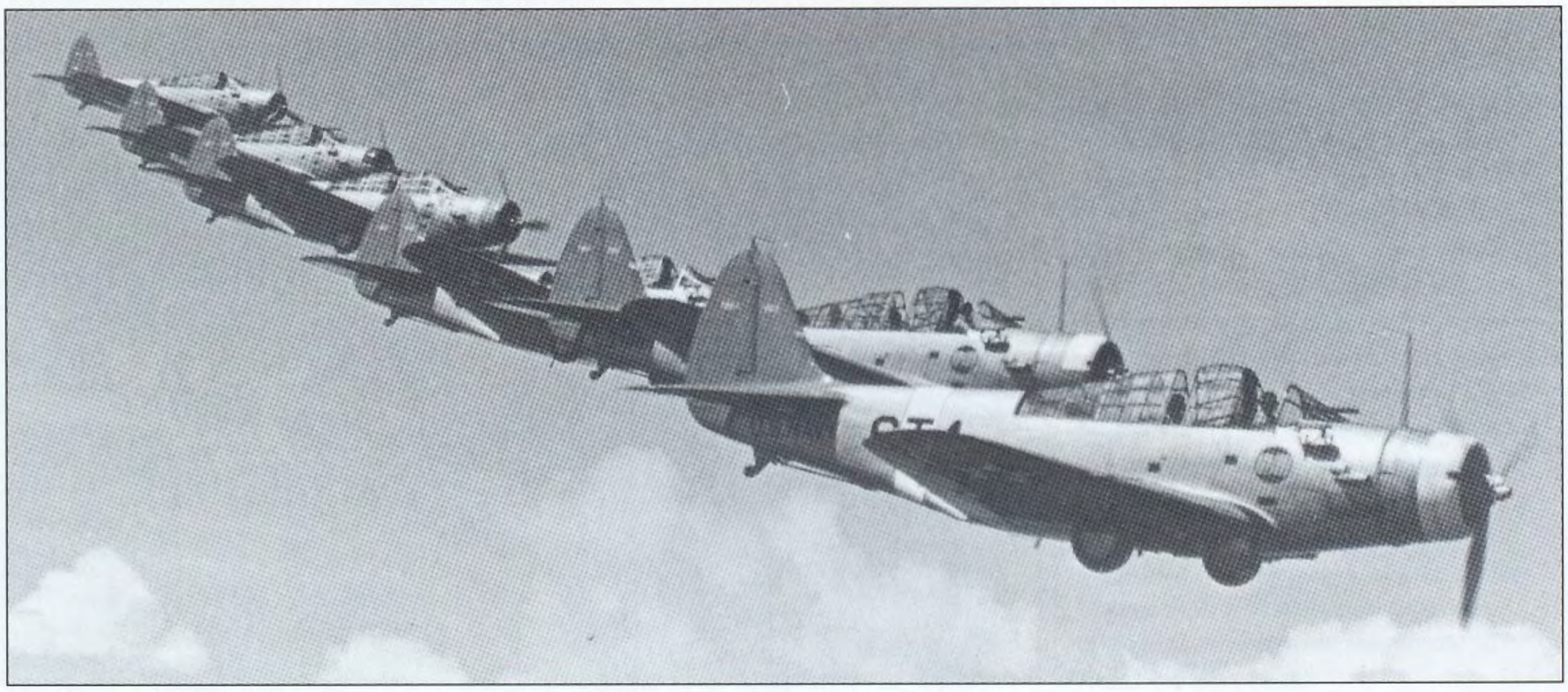
'Completing flight school at NAS Pensacola, Florida, in January 1938 was without a doubt the highlight of my life up to that point. I realised that very few enlisted personnel had the opportunity of becoming a Naval Aviation Pilot, and I had the pleasure of having my NAP designation presented by then Capt William F Halsey.

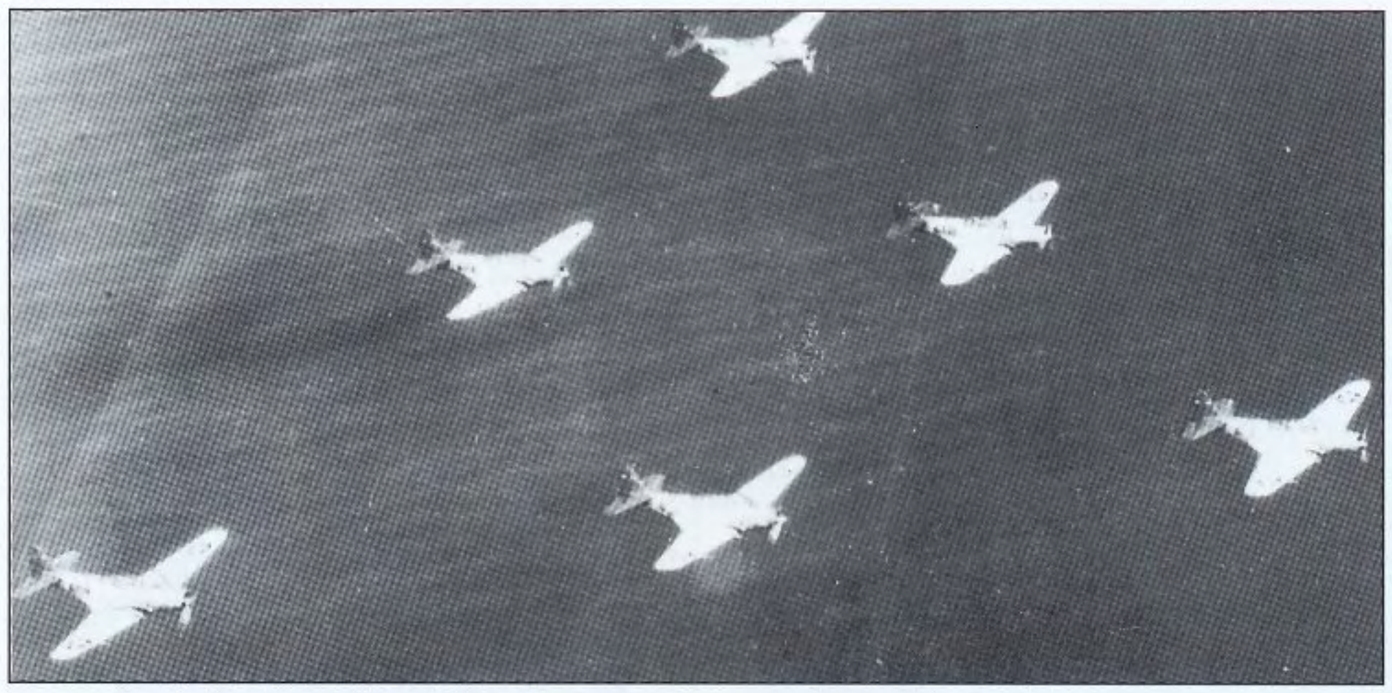
'I was ordered to the sub base at San Diego, California, to await assignment, and soon had orders to VT-3, assigned to USS *Saratoga*. Arriving at North Island, I observed several beautiful shiny monoplanes landing, and I thought, "That is the most beautiful aircraft I have ever seen". I just wished that someday I would have the opportunity to fly it – not at all aware that they belonged to the squadron to which I was ordered. I was overwhelmed upon reporting to learn that the planes I saw were VT-3 aircraft. Such beauties!

'The fleet was preparing for the annual manoeuvres so I didn't get checked out as first pilot until returning from manoeuvres in June 1938. After a few hours in the TBD, I was sure it was the best plane the Navy had at that time. It was faster than anything I had flown, and I was in love with the aircraft. Soon field carrier landing practice took place, followed by carrier qualifications day and night. I was quite tense during my first

6-T-3 (BuNo 0324) was the third aircraft of VT-6's first section, as denoted by the lower half of its cowling ring being painted in insignia red. This aircraft has the optional .50-cal gun installed just aft of the engine cowling and the later style pitot tube affixed to the leading edge of its starboard wing. The latter incorporated a small air temperature gauge just forward of the wing leading edge. BuNo 0324 was one of the 15 VT-8 SBD-1s lost during the Battle of Midway (*Peter M Bowers via the author*)

A mixture of first, second and third section TBD-1s from VT-6 formate for the camera during a training sortie over southern California in 1939. Lead aircraft BuNo 1511 was also lost during the Battle of Midway, flying with VT-3 from the *Yorktown* (*via Peter Mersky*)





VT-6 again poses for the camera, although this time the six-ship flight has the Pacific Ocean as its backdrop (*Douglas Aircraft via Harry S Gann*)

BuNo 0322 was the assigned aircraft of the commanding officer of VT-6. Delivered to the unit in March 1938, this TBD was lost at sea on 10 March 1939 when, upon launching from *Enterprise*, the port wing struck the water. The crew of ACMM F O Adams was recovered after the incident. The aircraft features a True Blue tail with red cowling and fuselage bands, plus red chevrons on its chrome yellow wings (*Douglas Aircraft via Harry S Gann*)

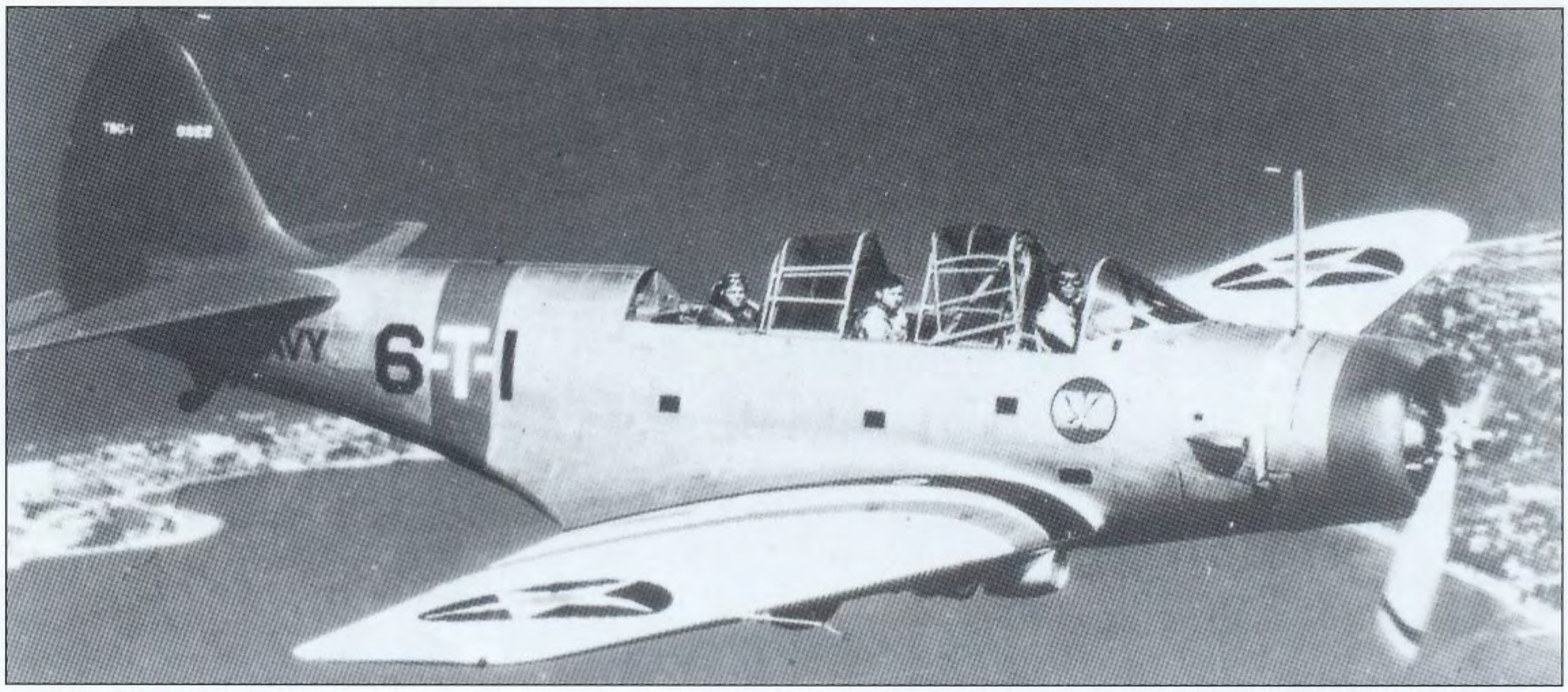
landings, but found that, like the other pilots, I too could land on the carrier. During night CarQuals I never felt really at ease, and felt that way throughout my carrier life insofar as night landings were concerned. But I realised that many other pilots felt the same way.

'Soon I was flying as first pilot, getting qualified in gunnery, torpedo dropping and all other aspects of carrier operations. One of the early lessons that the LSO stressed was don't ever let your aircraft get slow during final approach to a carrier, as the TBD did not have as much power as was needed to make a rapid recovery. Returning to the ship with a torpedo or maximum bomb load, it was wise to drop the ordnance, especially bombs, for getting slow in the groove just wasn't acceptable. After observing an aircraft hit the ramp, this wise counsel certainly made a lasting impression upon a pilot.

'We learned that the TBD didn't have much range – at least not as much as desired. But it was a reasonably easy aircraft to maintain. The "mechs" had good access to all areas of the engine and airframe. The one big problem was fighting corrosion, as the TBD, being made of aluminium and operating in salt air all the time, required constant diligence.'

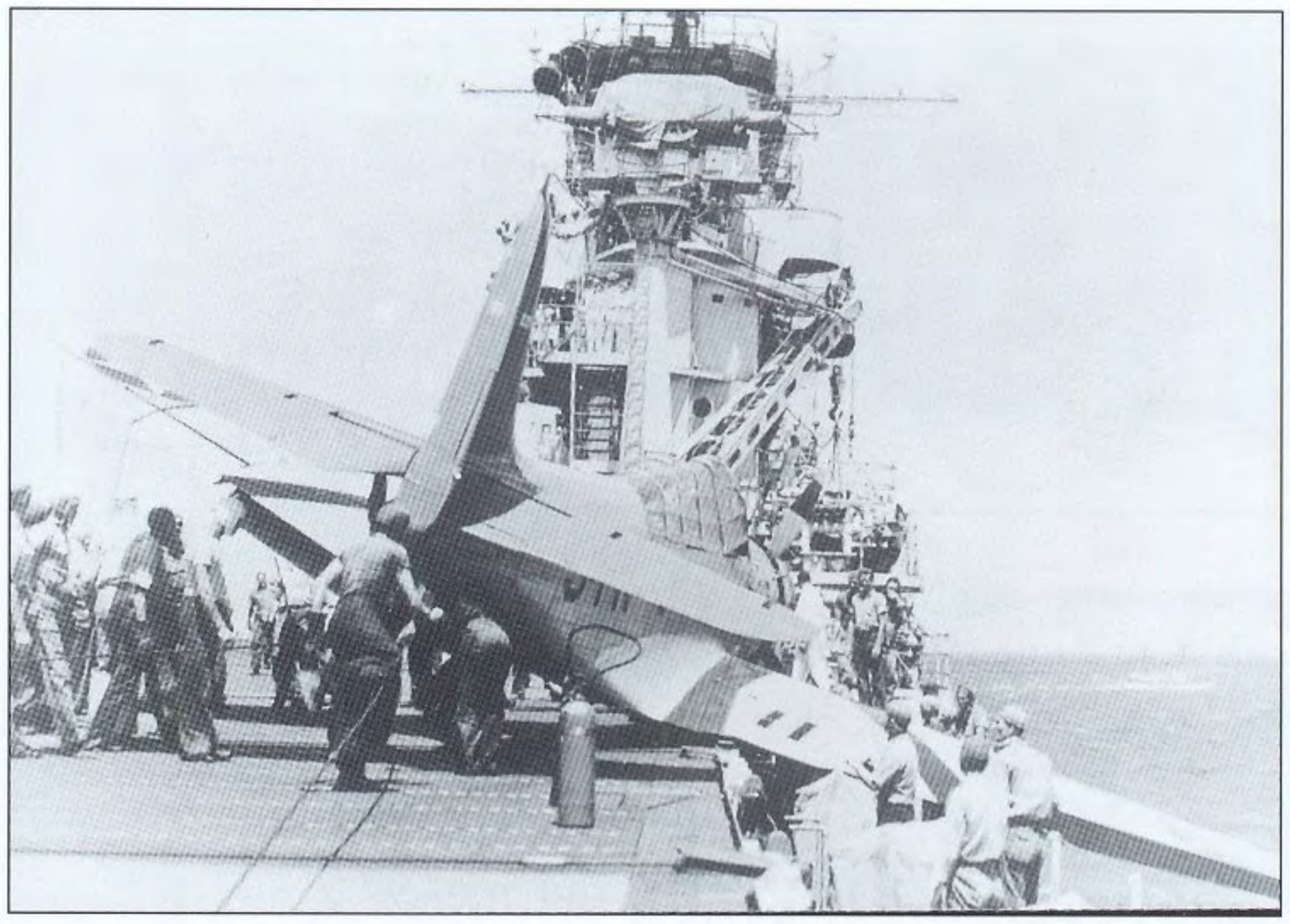
TORPEDO TECHNOLOGY

Designed in the late 1920s, the Mk 13 aerial torpedo experienced an erratic development. Nobody questioned the need for a new torpedo, for the existing Mk 7's recommended drop parameters were 75 knots at 25 ft, with 10 ft preferred! However, because of technical problems and insufficient funding, the Mk 13's research and development period stretched beyond normal lengths. Additionally, doctrinal problems remained to be settled during 1930. The Bureau of Aeronautics was divided between those who felt there should be a dedicated torpedo aeroplane and those who preferred a multi-role torpedo aeroplane and level bomber. The



'The one that almost got away!' While BuNo 0372 hangs precariously by its tailhook, *Enterprise* sailors work to 'reel in' 6-T-14. This dramatic event on 4 September 1940 appeared in *Life* magazine, and perhaps served to remind the American public of the dangers of naval aviation a full year after war had erupted in Europe. BuNo 0372 flew again, completing a stint in VT-3, before joining USS *Hornet* (CV-8) in time for the Battle of Midway, where it was lost as 8-T-13 (*USN via the Naval Aviation Museum*)

The all-enlisted crew of 6-T-14 is saved from its near dunking. The pilot, AMM2c A W Winchell, climbs over *Enterprise's* catwalk chain while observer ACMM W E Rollins and gunner RM2c W L Rose await their turn. Rose was subsequently killed (along with his pilot and observer) on 16 April 1941 when BuNo 0348 crashed in San Diego, while Winchell survived the destruction of VT-6 at Midway (*USN via the Naval Aviation Museum*)



Even peacetime carrier operations ran 'routine' risks. Here, VT-5's 5-T-11 is seen after it had come to rest in the starboard catwalk just aft of *Yorktown's* island on 3 September 1940. The aircraft suffered no serious damage and none of its crew were injured (*USN via the Naval Aviation Museum*)

debate extended to carrier design, as the newly authorised *Ranger* (CV-4) proceeded construction minus adequate storage for torpedoes.

Finally, the US Navy chose an unusual configuration – a relatively large diameter (22.4 in) and short length (13 ft 5 in), with low speed and long range. By comparison, the Mk 7 was 18 ft long and 18 in in diameter. Early Mk 13s weighed 1927 lbs, 600 of which was the warhead. They were rated capable of 33.5 knots out to 6300 yards.

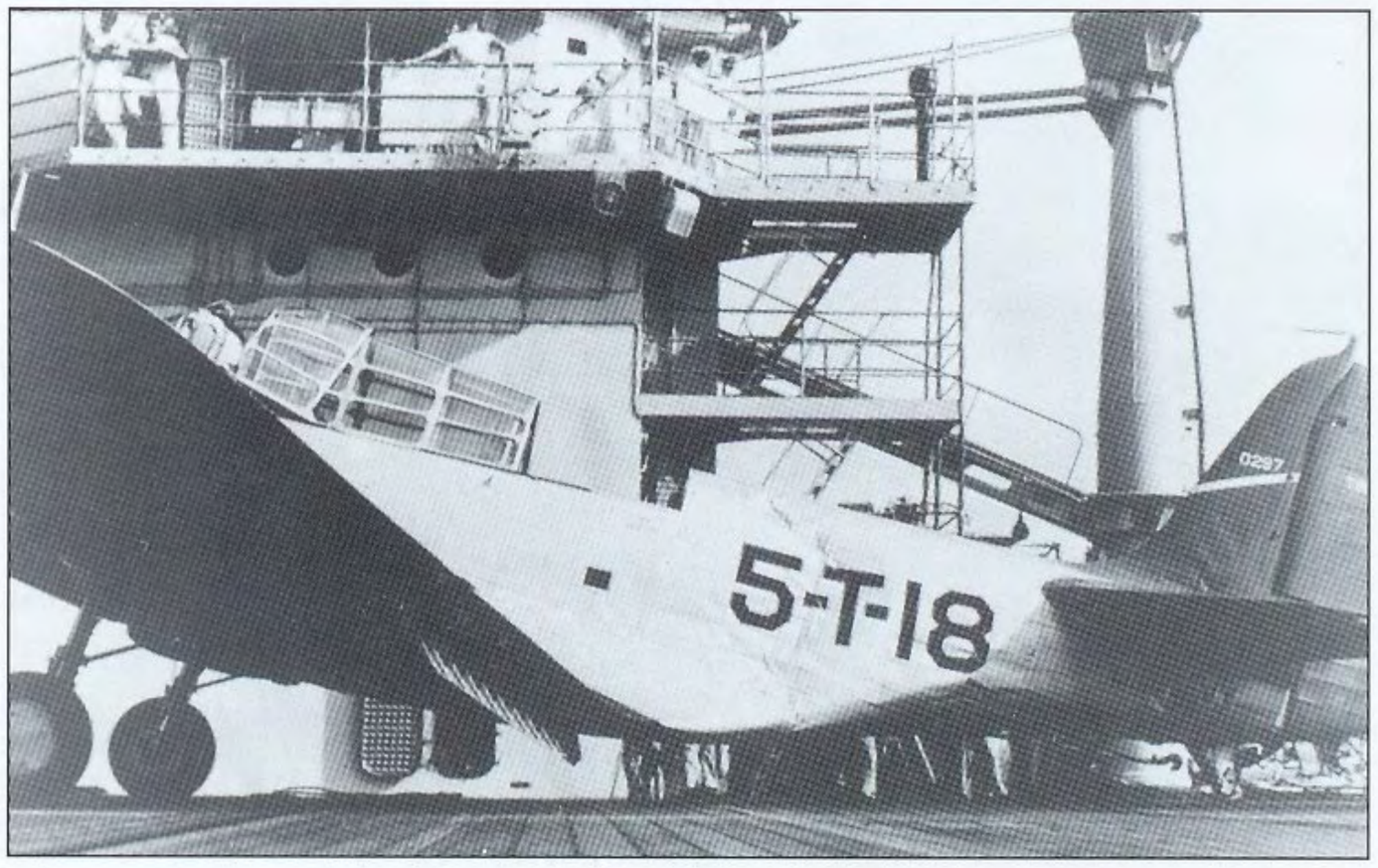
In a 1940 fleet gunnery exercise the Mk 13 gave no sign of encouragement – four of the ten 'fish' sank 'and were never seen again', while five more ran erratically. The ten per cent success rate anticipated the wartime figures, as 11 squadron-strength attacks from February through to June 1942 yielded merely ten hits from 95 known drops.

Some improvements were made in the time remaining. Tests showed a tendency to veer to port upon water entry, and the wooden tail fins often broke. These problems, however, did not address the Mk 13's erratic depth regulator, which could cause the torpedo to run beneath the intended target's hull. Broken propeller blades also dogged the design.

Despite remaining problems, in the spring of 1941 officialdom pronounced the Mk 13 an 'all-up round' with estimates of 80 per cent reliability when dropped from 140 ft. The ordnance bureau's assessment proved absurd. Fleet squadrons, which knew better, limited drop parameters to a maximum 110 knots at 50 ft or less, severely limiting torpedo tactics.

NAP AMM2c Tom Cheek described a prewar exercise with Mk 13 torpedoes;

'Before I left VT-2 in 1940, we made live drops against a towed target in the annual gunnery competition. We were flying the trusty "Tare



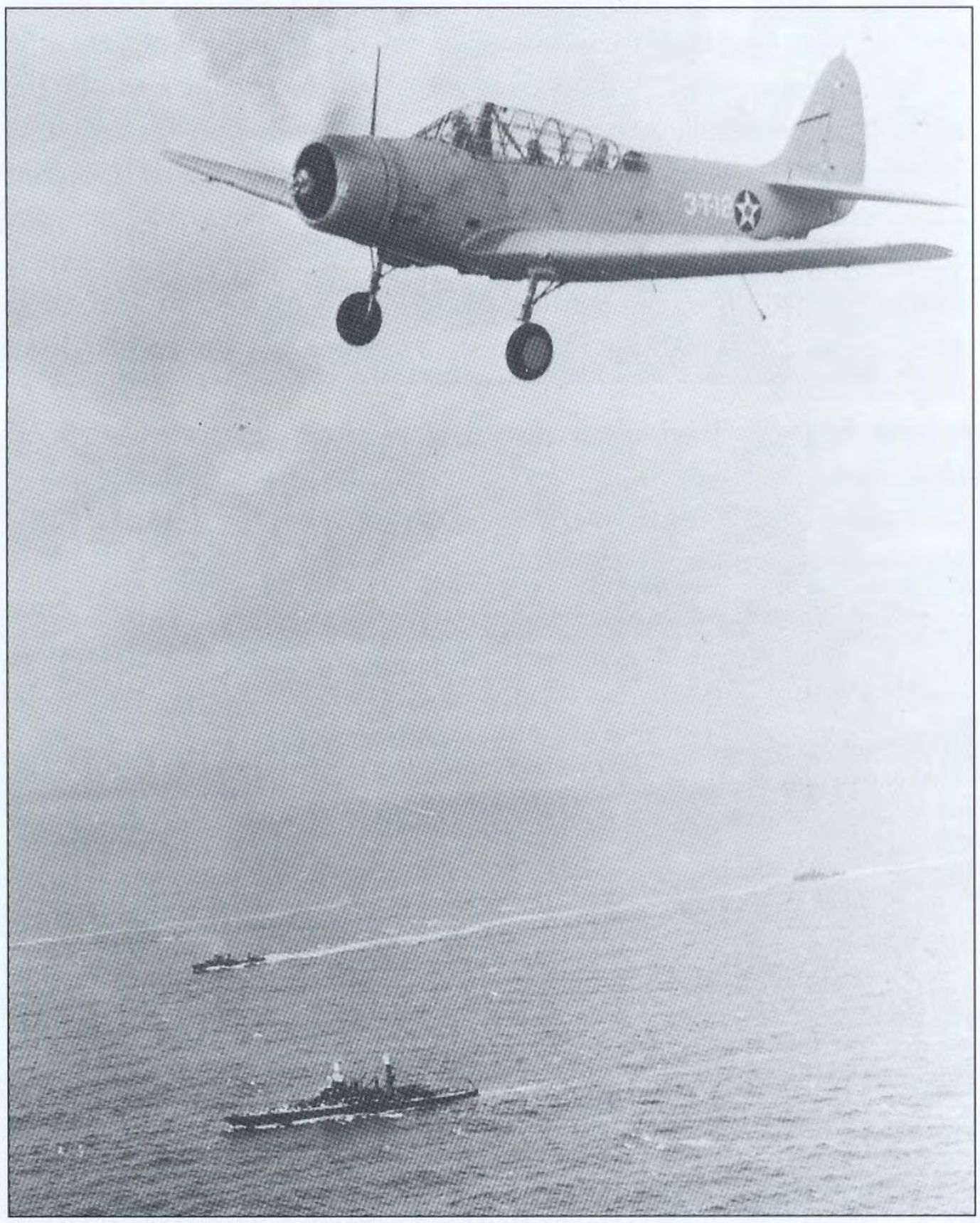
Torpedo Five logged a bad day on 3 September 1940, for T-18 also sustained damage whilst recovering back aboard CV-5. The fuselage of BuNo 0297 is visibly buckled aft of the gunner's cockpit following an arrested landing which stressed the airframe. *Yorktown* wrote off eight TBDs in the three-and-a-half years prior to the Japanese attack on Pearl Harbor, which was more than any other carrier. BuNo 0297 was originally a *Lexington* aircraft, being posted to *Yorktown* in March 1940. It was ultimately lost during the Battle of Midway as Torpedo Eight's T-3 (*USN via the Naval Aviation Museum*)

Baker Dog". I was co-pilot on the first run. After the first few moments of its run, the "fish" took an acute turn to port and was last seen leaping across the wave tops like a happy trout. I flew the second run – after an initial run of approximately 100 yards, the fish, running very shallow, veered starboard on a direct course for the tender towing the target raft. No "bullseye", but some very anxious moments!'

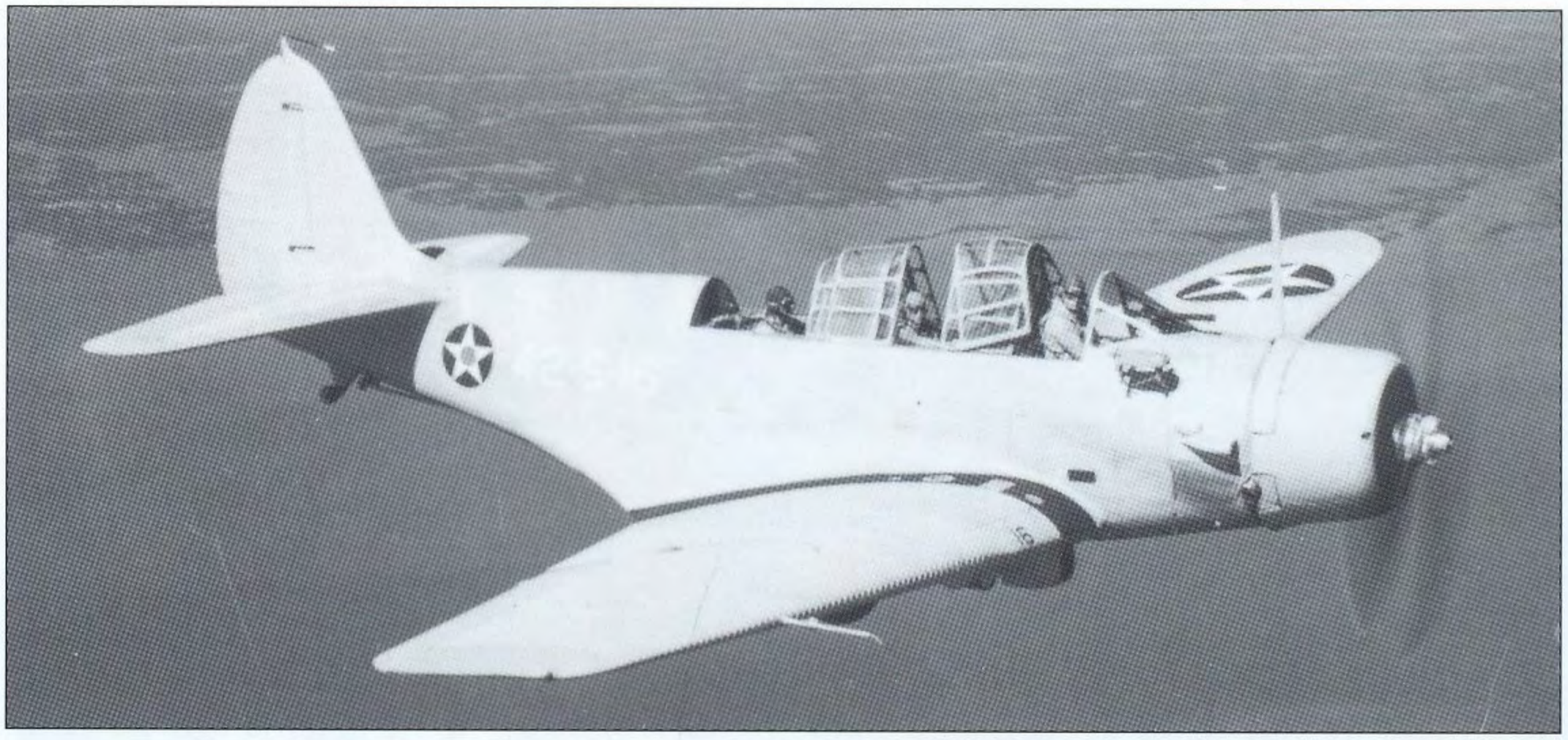
By comparison, the Royal Navy's standard aerial torpedo was the Mark XII, weighing 1548 lbs and measuring 16 ft 3 in long and 18 in in diameter. It could be launched at nearly 150 knots, although the Fleet Air Arm lacked such a carrier torpedo aeroplane until 1943! Range and speed of the Mk XII were 1500 yards at 40 knots, or 3500 yards at 27 knots.

Japan's superb Type 91 Mod 2 torpedo entered fleet service in 1941. Although of 18-in diameter, its 18-ft length and 450-lb warhead made it a potent weapon, as demonstrated at Pearl Harbor. It provided Imperial Navy aviators with a 40-knot weapon capable of 2000-yard range and – best of all – could be launched at 260 knots. No other navy on earth had anything like it.

Three *Saratoga* Devastators are seen in echelon formation during late 1941. The previous colourful peacetime markings have now given way to an overall glossy light grey scheme, with squadron identifications retained in white. The small fuselage national insignia with red centre would prove a short-lived marking once combat operations began (*Norman Polmar via Naval Aviation Museum*)



Hook down and wheels down, 3-T-12 enters *Saratoga's* landing pattern at the completion of a neutrality patrol in October 1941. The aircraft is painted in the light grey camouflage scheme with white numbers on the fuselage and cowling and an unusual LSO stripe on the vertical stabiliser. The TBD was considered a stable, well-behaved aircraft in landing configuration, but pilots were cautioned to beware of potentially adverse stall characteristics at low speed with wheels and flaps down. The large warship in the background is a *Maryland* class battleship (*via Norman Polmar*)



VS-42 operated three TBDs from USS *Ranger* between January and October 1941, one of which was 42-S-16. Two *Wasp* squadrons – VS-71 and -72 – also flew TBDs in the Atlantic Fleet during this period. Wearing a colour scheme typical of the era, this aircraft carries a solitary national insignia on its upper wing surfaces (*via Norman Polmar*)

Nor did anyone else have a carrier-based torpedo aeroplane to match Nakajima's B5N. First flown in January 1937, it entered production later that year as the Type 97 Carrier Attack Bomber (later code named 'Kate' by the allies). The wartime variant, B5N2, was capable of 200 knots at 12,000 ft, and routinely flew 200-mile radius missions. Thus, it was more than 25 knots faster than the TBD with far more range.

Little of the foregoing was known to the US Navy fliers who eventually would have to contend with the formidable Japanese torpedo threat, however. Meanwhile, additional squadrons received limited numbers of TBDs through 1940 and 1941. *Wasp* (CV-7) was commissioned in April 1940 and, with *Ranger*, possessed a moderate number of torpedo aeroplanes. Scouting Squadrons 41 and 42 were also allotted three each in *Ranger*, but only the latter actually owned any TBDs. *Wasp's* VS-71 and -72 similarly were allowed 'torpeckers' in 1940-41 for target towing. In any case, the VS designation obviated a primary role of torpedo attack. Two other units had single TBDs temporarily assigned in the pre-war era, namely Utility Squadron Three (VJ-3) and Marine Scouting Squadron Two (VMS-2). However, the newest carrier's TorpRon to receive the Douglas would become the most famous – Torpedo Eight.

Based at Norfolk as part of the new *Hornet* (CV-8) air group, the squadron was established on 2 September 1941. Lt Cdr John C Waldron's unit received its first TBD on the 28th, and 12 more were on hand by the end of October.

Meanwhile, attrition had continued to take a toll. Some 17 TBDs had been stricken by the end of 1940, and another ten were lost in the next six months. Thus, at the time of Pearl Harbor, the overall inventory numbered just about 100. The primary fleet squadrons were VT-2, -3, -5, -6, and -8, and two more were established almost immediately – *Ranger's* VT-4 on 17 December and *Wasp's* VT-7 on 2 January 1942. However, the latter never reached full strength since the five previously existing TBD squadrons absorbed most of the remaining Devastators, as the type had been named in late 1941.

The attrition only continued – on 8 December Torpedo Three lost an aircraft at sea as *Saratoga* sped out of San Diego, bound for Hawaii.

TO WAR

By the time war erupted in Europe in September 1939, the TBD had lost its monopoly as the US Navy's sole carrier-based monoplane. However, American naval air groups still relied heavily on biplane fighters in the shape of the Grumman F3F series, and operating doctrine remained in a state of flux. The fleet TBD squadrons, however, had developed sufficient experience with the following structure;

TBD Squadrons - September 1939
VT-2 USS *Lexington* (CV-2) – Lt Cdr G A Dussault
VT-3 USS Saratoga (CV-3) – Lt Cdr F C Sutton
VT-5 USS Yorktown (CV-5) – Lt Cdr J P Vest
VT-6 USS Enterprise (CV-6) – Lt Cdr G H DeBaun

Two more years would elapse before the Douglas torpedo-bomber was committed to combat.

The Devastator's first day at war was long, frustrating, and unproductive. Torpedo Six was inbound for Pearl Harbor following *Enterprise's* sortie to Wake Island on Sunday morning, 7 December 1941. Once the initial shock of the attack by six Japanese carrier air groups was absorbed, the 'Big E' moved to deal with the unexpected situation. With 18 of her 37 Dauntless scout-bombers committed to the flight into Ford Island, Pearl Harbor, the carrier's main offensive potential was Lt Eugene E Lindsey's 18 TBDs.

Based on an 'enemy' surface force reported 100 miles south-east of *Enterprise's* Task Force 8, the carrier launched VT-6 with six VB-6 SBDs carrying smoke generators. According to air group doctrine, the dive-bombers would lay a smoke screen to cover the approach of the 'torpeckers', escorted by six F4F-3 Wildcats. The 30 aircraft were airborne by 1700, flying into a gathering twilight.

Lt Cdr Lance E Massey led the US Navy's first aerial torpedo attack when he took nine VT-6 TBDs against Japanese shipping at Kwajalein Atoll on 1 February 1942. The *Enterprise* pilots claimed hits on a number of enemy vessels, as represented by the warship silhouette on a rising sun flag below Massey's windscreen. In April the VT-6 executive officer assumed command of VT-3, leading the squadron from *Yorktown* (CV-5) in the Battle of Midway, where he was killed in action (*CDR Lance B Massey, USN (Ret), via the Naval Aviation Museum*)

The pilots of Torpedo Six pose for a group photograph on the flightdeck of *Enterprise* in late January 1942 following the announcement of the impending Marshall Islands raid (*via Mark Horan*)

Arriving at the expected contact point around 1800, Lindsey began a systematic search for the Japanese ships. He could not know that the scout pilot had misidentified US Navy ships and Army Air Force aeroplanes for those of the enemy, but in any event darkness was descending. Lindsey bowed to the inevitable and led his formation back to the task force.

Vice Adm William F Halsey, commanding Task Force 8, decided to keep a ready deck for his bombers. Therefore, the six Wildcats were directed to proceed to Pearl Harbor, where trigger happy gunners shot down three. The TBDs and SBDs landed aboard in full darkness, requiring *Enterprise* to turn on her flightdeck lights despite the danger of Japanese submarines. The air group was not yet fully night qualified in carrier landings, but all 24 aircraft 'trapped' safely, responding to the landing signal officer's illuminated paddles during a recovery a period which lasted for nearly an hour. This event was marked by only one incident when a TBD struck a raised barrier, causing its torpedo to wrench loose. The errant 'fish' was grappled by flightdeck sailors and wrestled to a stop without damage to personnel or equipment.

On 10 December TBDs logged their first combat when *Lexington* launched a pair of VT-2 aircraft to pursue a submarine contact west of Johnston Island, 700 nautical miles west-southwest of Oahu. The Devastators were accompanied by two VF-2 Buffalos and caught a surfaced I-class boat. As the F2As strafed, both TBDs dropped depth charges on successive runs. All four landed close aboard, but no damage was proven.

THE LINE-UP

In December 1941 the US Navy had 99 TBD-1s for seven fleet squadrons, aircraft pools and training or development establishments. Additionally, the prototype and the TBD-1A floatplane were retained on the East Coast. What follows is a unit by unit breakdown;

Atlantic Fleet		
VT-4	USS *Ranger* (CV-4)	3 TBD-1s
VT-5	USS *Yorktown* (CV-5)	14 TBD-1s
VS-71	USS *Wasp* (CV-7)	2 TBD-1s
VT-8	USS *Hornet* (CV-8)	8 TBD-1s
Com AirLant	NAS Norfolk, Virginia	8 TBD-1s
ACTG	NAS Norfolk, Virginia	2 TBD-1s
Air Station	NAS Pensacola, Florida	1 XTBD-1
Pacific Fleet		
VT-2	USS *Lexington* (CV-2)	14 TBD-1s
VT-3	USS *Saratoga* (CV-3)	12 TBD-1s
VT-6	USS *Enterprise* (CV-6)	22 TBD-1s
Battle Force	NAS Pearl Harbour, Hawaii	2 TBD-1s
Battle Force	NAS San Diego, California	6 TBD-1s
Air Station	NAS San Diego, California	1 TBD-1
Other Commands		
Naval Proving Ground	Dahlgren, Virginia	3 TBD-1s
Naval Aircraft Factory	Philadelphia, Pennsylvania	1 TBD-1
Naval Inspector	Bethpage, New York	1 TBD-1
Naval Torpedo Station	Newport, Rhode Island	1 TBD-1A

On the East Coast, Commander Naval Air Forces Atlantic Fleet retained eight Devastators at NAS Norfolk, Virginia, as a pool for replacement aircraft. Also based at Norfolk was the Aircraft Carrier

Torpedo Five mechanics work on an unidentified TBD, believed to be BuNo 0319, which was flown by the squadron commander, Lt Cdr Joe Taylor. At the time this photograph was taken in December 1941, *Yorktown* was still on the East Coast, but the impromptu sign clearly indicates the ship's ultimate destination. The aircraft was issued to VT-5 straight from the Douglas factory in early 1938, remaining with the unit until late 1939 when it was transferred to *Saratoga's* VT-3. However, 0319 rejoined Torpedo Five in September 1941 and flew from *Yorktown* until after the Coral Sea battle. Subsequently, it was used by operational training units in Corpus Christi, Texas, and Melbourne, Florida, before being stricken in October 1943 (*USN via the Naval Aviation Museum*)

Torpedo Six pilots appear entirely serious during briefing for *Enterprise's* Marshall Islands attack of 1 February 1942. In the first row (from left to right) can be seen Ens I H McPherson, Lt A V Ely and Ens S L Rombach, in the second row Ens Edward Heck, Lt(jg) Lloyd Thomas and Lt M White, and in the third row Ens F G Hodges and two unidentified pilots (*Mark Horan via the Naval Aviation Museum*)

Training Group (ACTG), which trained newly-minted naval aviators in the esoteric art of landing aboard ship. Two TBDs were available for fledgling torpedo pilots.

In the Pacific Fleet, a small pool was maintained by the Battle Force in Hawaii with two TBDs, while 'BatFor' San Diego had six Devastators to meet contingencies. *Enterprise's* unusually large torpedo contingent of 22 aircraft included four spares officially assigned to the ship but maintained by the resident TorpRon, VT-6. *Lexington's* complement of 14 TBDs likewise included two nominally 'owned' by the ship rather than the squadron or air group. With 48 embarked Devastators, PacFleet's three squadrons operated at 133 per cent of authorised strength.

The 16 Devastators in Atlantic and Pacific Fleet pools represented a 20 per cent reserve for all squadrons likely to deploy to combat. *Yorktown* was hastily transferred from the Atlantic to the Pacific Fleet while *Ranger*, *Wasp* and *Hornet* were kept on the East Coast for the time being. *Ranger*, the smallest fleet carrier in the US Navy, had been built without torpedo storage, so her TBD complement was necessarily limited. *Wasp* and *Hornet's* TorpRons were still building.

Single TBDs were available as administrative or 'hack' aircraft at NAS Pensacola, NAS San Diego, the Naval Aircraft Factory in Philadelphia, and the Inspector of Naval Aircraft at the Grumman plant on Long Island.

TORPEDO TACTICS QUESTIONED

In early 1942 the commanding officer of *Saratoga's* VT-3, Lt Cdr J E Clark, wrote a well reasoned memorandum to Commander, Aircraft, Battle Force of the Pacific Fleet. Clark's astute evaluation of peacetime 'battle' practice versus the probable reality of combat closely mirrored a comparable situation in the US Navy's submarine service. Consequently, the TorpRon Three skipper advocated an unusual high-level approach to any hostile warship formation despite the perceived danger of radar detection. In part he wrote;

'This squadron has practised extensively with both (high and low level approaches), and as a result has adopted the former as standard policy. By high level approach it is meant that the planes are at cloud level or about 7000 ft if clear when the target is sighted. Low level approach is one in which the planes are never above a few hundred feet from a point beyond the target's horizon.'

Clark criticised the 'outstanding artificialities' of peacetime exercises, especially an unrealistic knowledge of the target's composition, arrangement, course and speed. He noted that it was folly to expect scouting aircraft to provide an accurate description of the hostile fleet, whose course, speed, and disposition might constantly change. Thus, he

Torpedo Six's number five aircraft (BuNo 0368) over Wake Island on 24 February 1942. The crew of Ens J P Gray included AOM2c O G Fowe and RM2c H F Littlefield, and they dropped 100-lb bombs on Japanese oil tanks and a moored seaplane. Overall results were disappointing, but VT-6 sustained no losses. Ens Gray was subsequently transferred to *Hornet* and was lost with VT-8 at Midway (*USN via the Naval Aviation Museum*)

advocated the high ('panoramic') approach as not only the best means of properly assessing the tactical situation, but the only one.

The VT-3 officer also realised that the TBD's greatest failing – poor speed – would work in favour of the defenders. A low level approach would permit no more than 130 knots airspeed, whereas a shallow descent from altitude could manage 180 knots or perhaps better, thus reducing exposure time to enemy fighters and anti-aircraft guns.

Both this photograph and the one above it were taken by the bombardier in Black 4 (BuNo unknown), Mach Steven Burdette Smith. His pilot on this mission was Lt A V Ely and his gunner RM1c D J DiFilippo. Made executive officer of VT-6 by the spring of 1942, Art Ely was lost flying BuNo 0342 as part of VT-6's second division attack on the Japanese carrier *Kaga* during the Battle of Midway on 4 June. Steven Smith had also been promoted (to Chief Machinist) by the time this pivotal engagement took place, and he too participated in the second division attack, piloting TBD-1 BuNo 0338. Unlike Ely, he survived the mission and returned safely to *Enterprise* (*via Peter Mersky*)

Co-ordination was deemed vital to success – a prediction verified positively at Coral Sea and negatively at Midway. While some Pacific Fleet commanders assumed that the Japanese would have radar equal to the US Navy's, Clark felt that a combined dive-bombing and torpedo attack, initiated at the best possible airspeed, would largely negate the warning provided by radar detection. During 1942, of course, the Imperial Navy had almost no ship-based radar, but that information was unknown to Clark and his counterparts.

Fleet doctrine called for scout bombers to provide a smoke screen for torpedo aeroplanes – a folly that Clark immediately recognised. He observed that the six 'smokers' generally called for would be much better employed in attacking the closest destroyer or cruiser to the target vessel – likely a carrier or battleship. Furthermore, he felt that laying a smoke screen would 'telegraph' the developing attack, betraying the direction of the American threat axis.

Clark had empirical data as well as logic on his side. VT-3 had demonstrated that a fast, jinking approach would limit effective gunnery

tracking to only about ten seconds. During the vulnerable retirement phase of the attack, a turn opposite to the target's heading presented a wide angle shot at roughly half a mile. Gunnery officers told Clark that they had very little confidence in hitting a torpedo-bomber at that range and deflection angle.

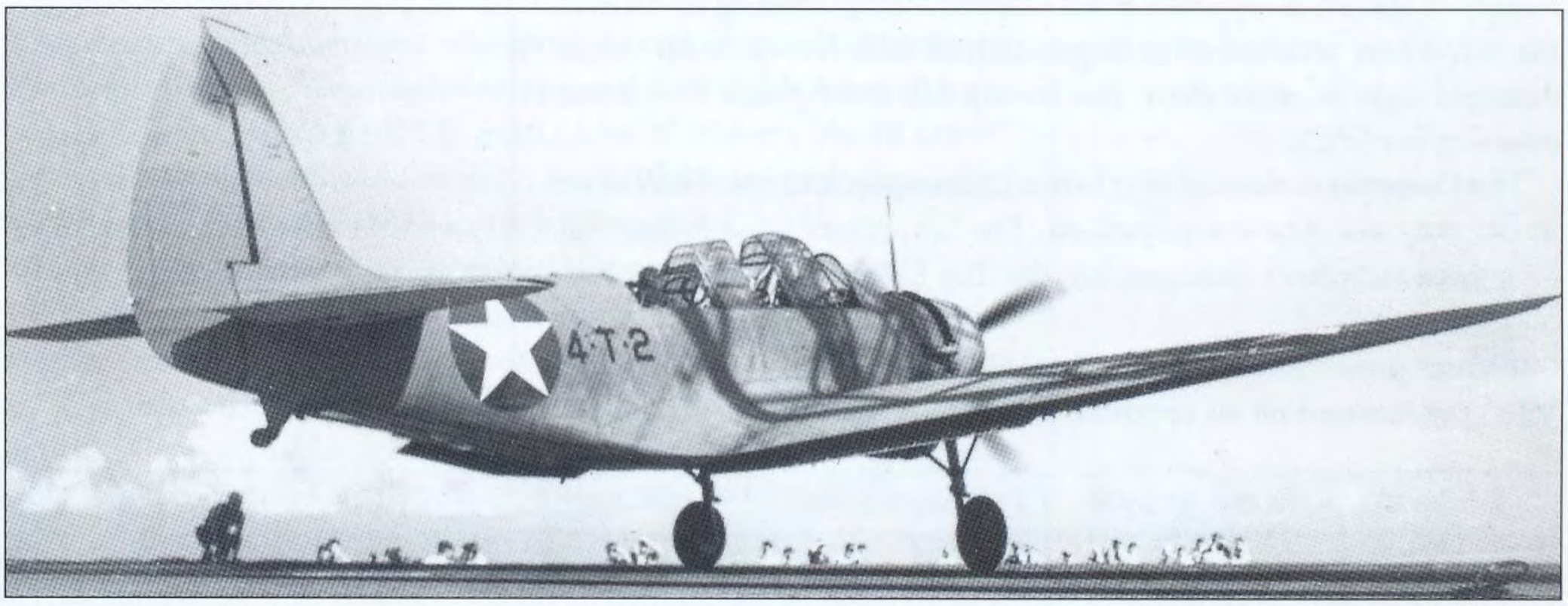
In conclusion, Clark said, 'our peace time torpedo plane procedure was far more theatrical than practical.'

THE HIT AND RUN WAR

Although no TBDs had yet been lost to enemy action, the routine hazards of carrier aviation took a toll. On 10 January 1942, Torpedo Three lost a bombardier and gunner when an ensign struck *Saratoga's* ramp during recovery in heavy seas.

Six days later an *Enterprise* crew failed to return from a search mission. Chief Machinist Harold Dixon asked for a bearing to the ship but then announced he was ditching T-14 (BuNo 0335). No sign was found of the crew, so the 'Big E' sadly wrote off the men and proceeded on her mission. Incredibly, the three men survived 34 days adrift before reaching land 750 miles from their ditching position. They subsisted on whatever fish or birds they could catch and too little rain water. After rescue, Chief Dixon was awarded the Navy Cross for 'extraordinary heroism, exceptional determination and skilled seamanship, resourcefulness and judgement . . . exhibiting the highest quality of leadership'.

Sporting its full squadron designation, 4-T-2 launches from USS *Ranger* (CV-4) during Atlantic Fleet operations in 1942. The carrier operated out of Guantanamo Bay, Cuba, during the first year of American involvement in World War 2, its aircraft flying numerous uneventful anti-submarine patrols over the South Atlantic and Caribbean Sea. Torpedo Four had nine TBDs on strength between December 1941 and September 1942, while the bombing squadron also used three Devastators in December and January. TBDs saw no combat outside the Pacific Theatre of Operations, despite *Ranger* and *Wasp* (CV-7) employing them on myriad North Atlantic patrols (*USN via the Naval Aviation Museum*)



VT-6 Wotje Bombing Attack – 1 February 1942

Sqn No	BuNo	Pilot	Bombardier	Gunner
1	0370	Lt Cdr E E Lindsey	ACMM T E Schafer	ACRM W H Sandefer
2	1512	Ens T A Aspell	AOM2c R L Leonard	RM3c W D Horton
3	0279	Ens S L Prickett	AOM3c A T Berto	RM2c Lindgren
4	-	Lt A V Ely	Mach S B Smith	RM1c D J DiFilippo
5	0368	Ens J P Gray	AOM2c O G Fowe	RM2c H F Littlefield
6	0366	Ens J S Morris	AMM1c H H Hancock	RM3c D R Butler
7	0294	Lt(jg) R E Laub	AMM1c A W Winchell	RM1c W C Humphrey
8	0367	Ens W W Creamer	AOM1c G M Burchfield	RM3c W F Glenn
12	0311	Ens R M Holder	AMM3c S L Lubker	RM3c R L White

VT-6 Kwajalein Torpedo Attack – 1 February 1942

Sqn No	BuNo	Pilot	Bombardier	Gunner
10	0342	Lt Cdr L E Massey	RM1c C T Grenat	-
11	0338	Lt(jg) J T Eversole	RM3c J M Blundell	-
9	0378	Ens S L Rombach	RM3c R W Graetz	-
13	1505	Lt D M White	RM2c J U Lane	-
19	-	Lt(jg) Lloyd Thomas	Sea1c G J Durawa	-
15	0328	Ens Edward Heck Jr	RM3c D L Richey	-
16	-	Lt P J Riley	RM3c E J Mushinski	-
17	-	Ens I H McPherson	Sea1c G F Lied	-
18	0274	Ens F G Hodges	R M F D Dragon	-

Four significant efforts were mounted during February and March 1942, providing three TBD squadrons with 'warm-up' experience for greater things. On 1 February the *Enterprise* task force struck the Marshall Islands while *Yorktown's* group attacked the Gilberts. The 'Big E' kicked off with a predawn launch against Kwajalein Atoll – 37 SBDs and nine TBDs, which bombed a light cruiser and a submarine. Lt Cdr Lindsey's aircraft released 54 500-lb general-purpose bombs with marginal results.

A false alarm of two carriers in the lagoon prompted the launch of nine more TBDs under the command of VT-6 executive officer Lt Cdr Lance Massey in the US Navy's first aerial torpedo attack. Finding no carriers, the 'torpeckers' attacked other targets and, all told, *Enterprise* Air Group damaged eight or more ships. But enemy flak and fighters took a toll, downing five SBDs.

The Devastators claimed four hits on a transport and two oilers when in fact only one ship was torpedoed. The 'torpeckers' were lucky, with only three aeroplanes damaged, but the 'Big E's' report stated prophetically;

'Fighter protection for VT is mandatory. Fortunately, in this action VT-6 encountered no air opposition, but it is certain that their mission

VT-5 Jaluit Bombing Attack – 1 February 1942

Sqn No	BuNo	Pilot	Bombardier	Gunner
1	0319	Lt Cdr J F Taylor	CRM H S Hobbs	ACCM E J Williamson
2	-	Lt(jg) T B Ellison	ARM3c E W Jones	AOM1c E M Whaley
3	-	Lt A B Furer	RM3c G O Aulick	Pho1c J J Wiles
4	-	Lt E B Parker Jr	RM1c A M Shirah	Gunner J C Livezey
5	0333	Lt(jg) R Denniston	Sea1c L H Kershaw	AOM2c R W Walcott
6	1515	Ens H R Hein Jr	Sea1c M E Weindham	AOM3c J D Strahl
7	0298	Lt H T Johnson	RM1c J W Dalzell	ACMM C E Fosha
8	0352	Lt J C Moore*	RM3c H C Schonborg*	AOM1c H F Omo*
9	-	Ens G E Bottjer	RM3c R A Machalinski	Sea1c C L Smith
10	1507	Lt F X Maher Jr *	RM3c R L Ayers*	AMM1c J C Chitwood*
12	-	Ens A J Schultreiss	RM3c F J Chantiny	AOM3c H E Sybrant

Note: Aircrew killed in this action are marked with an asterisk

VT-6 WAKE ISLAND BOMBING ATTACK – 24 FEBRUARY 1942

Sqn No	BuNo	Pilot	Bombardier	Gunner
1	0370	Lt Cdr E E Lindsey	CRM W H Sandefer	ACMM T E Schafer
2	1512	Ens T A Aspell	RM3c W D Horton	AOM2c R L Leonard
3	0279	Ens S L Prickett	RM2c A R Lindgren	AOM3c A T Berto
4	-	Lt A V Ely	RM1c D J DiFilippo	ACMM S B Smith
5	0368	Ens J P Gray	RM2c H F Littlefield	AOM2c O G Fowe
6	0366	Ens J S Morris	RM3c D R Butler	AMM1c H H Hancock
7	0294	Lt(jg) R E Laub	RM1c W C Humphrey	AMM1c A W Winchell
8	0367	Ens W W Creamer	RM3c W F Glenn	AOM1c G M Burchfield
9	0378	Ens S L Rombach	ARM?c R W Graetz	AMM?c K C McDowell

would not have been accomplished had they been intercepted by enemy fighters which were in the near vicinity.'

Yorktown's aviators also fared poorly this day (actually 31 January across the International Date Line). In marginal weather they lost six of the 28 first strike aircraft, four of those belonging to Torpedo Five, which apparently fell victim to the weather conditions. Lt H T Johnson, the squadron's executive officer flying No 7 (BuNo 0298), and Ens H R Hein in No 6 (1516), ditched out of fuel.

With their crewmen they made their way to tiny Gebu Island, where they were accepted by friendly Micronesians. However, two days later the Japanese found the Americans, who spent the rest of the war in captivity. Two more Torpedo Five aeroplanes apparently collided in heavy cloud as Lt Jack C Moore's No 8 (0352) and Lt Max V Maher's No 10 (1507) were lost with all hands. Additionally, No 5 (0333) aborted when Lt(jg) R Denniston was unable to retract his landing gear.

Only two enemy ships were damaged in return for these losses.

Three weeks later, on 24 February, *Enterprise* hit Wake Island with minimal results. Nine TBDs dropped 108 100-lb bombs from 12,000 ft as VT-6 attacked oil tanks and a moored seaplane, but overall damage was limited. Then, on 4 March, the 'Big E' attacked Marcus Island, without launching VT-6, and without substantive damage to either side.

Torpedo Six lost an aircraft on 18 February when Lt(jg) John T Eversole became disoriented in high winds and made a water landing about 60 miles from the task force. Happily, the crew of 'Tare 18' was rescued by a destroyer the next day and returned to *Enterprise*. Additionally, VT-3 lost a Devastator on the 22nd, a reminder that naval aviation posed more hazards than enemy aircraft or AA guns.

Upon *Enterprise's* return to Pearl Harbor, VT-6's executive officer was reassigned. Lt Cdr Lance E Massey assumed command of *Saratoga's* Torpedo Three, relieving Lt Cdr J E Clark. Massey inherited Clark's well-conceived doctrine of torpedo attack, and decided to keep the previous CO's tactics, which would be tested in less than 90 days.

NEW GUINEA

The largest TBD operation to date occurred on 10 March when *Lexington* and *Yorktown* launched simultaneous strikes against Lae and Salamaua, in New Guinea. The targets – Japanese ships – lay on the island's west coast,

VT-2 Lae-Salamaua Torpedo Attack – 10 March 1942

Sqn No	Pilot
T1	Lt Cdr James H Brett
-	Lt Edwin W Hurst
-	Lt Robert F Farrington
-	Lt French Wampler Jr
-	Lt(jg) Richard B Forward
-	Lt(jg) Lawrence F Steffenhagen
-	Ens Thomas B Bash
-	Ens Harold R Mazza
-	Ens Norman A Sterrie
-	ACMM (NAP) Curtis Hamilton
-	ACOM (NAP) Melvin H Georgius
-	Gunner Harley E Talkington
-	ACMM (NAP) Bruce C Shearon

but Vice Adm Wilson Brown planned to launch from the Gulf of Papua, overflying the narrow southern neck of New Guinea to strike from the south. The launch cycle commenced at 0749, with each air group putting up 52 aeroplanes, including 13 from VT-2 and a dozen from VT-5.

The Devastator loadout was mixed, for Lt Cdr James Brett Jr's VT-2 carried torpedoes. Brett, a 36-year-old Georgian, had graduated from the US Naval Academy in 1928, and his 13 years of experience were finally being put to the test. Lt Cdr Joe Taylor, from Illinois and the Annapolis Class of '27, led Torpedo Five with 500-lb bombs.

Crossing the Owen-Stanley Mountain Range posed a problem for VT-2. Laden with one-ton torpedoes, Brett's pilots found themselves straining to clear the 7500-ft pass. But the skipper found a way. He shrewdly assessed the topography and led his unit into a thermal that provided a badly needed lift. The TBDs cleared the crest and proceeded on course.

Lexington's aviators found 14 Japanese ships offshore between Lae and Salamua. Bombing Two and Torpedo Two had intended to co-ordinate

VT-5 Lae-Salamaua Bombing Attack – 10 March 1942

Sqn No	Pilot
1	Lt Cdr J Taylor
2	Lt L E Ewoldt
3	Ens F R Sanborn
4	Lt(jg) R Denniston Jr
5	Ens A J Schultheis
6	NAP Lawson
7	Ens E B Parker
8	Ens A B Furer
9	Ens G E Bottjer
10	Lt(jg) T B Ellison
11	Gunner J C Livezey
12	NAP E J Williamson

their attacks, but the numerous targets precluded much teamwork as sections and divisions began separate runs about 0930. One of Brett's crews hit a transport, sinking her in the shallow harbour, but other torpedoes malfunctioned.

Shortly after 1000 Lt Cdr Taylor arrived with his bomb-toting VT-5. Selecting *Kiowkawa Maru*, a converted seaplane tender 25 miles east of Lae, the 'Yorktowners' bombed from 13,000 ft. Of 24 bombs dropped, at least one connected, flooding the engine room. An enemy floatplane made a pass at the TBDs, whose gunners returned fire and watched as it dived away. Postwar evaluation revealed that VT-5's third section scored, as a Type 95 floatplane (later called 'Dave') force landed and sank, although both crewmen survived.

A combined Army Air Force and Royal Australian Air Force mission followed the carrier strike. In all American and Australia fliers claimed ten ships sunk, including three cruisers and a destroyer, in exchange for a *Lexington* SBD. In truth, the Japanese lost three transports with two more moderately damaged. However, the TBDs had demonstrated a threat to shipping with both bombs and torpedoes, and escaped without harm.

TULAGI

Following additional patrolling in South Pacific waters, *Lexington* and *Yorktown* prepared to strike the Japanese seaplane base under construction at Tulagi in the Solomon Islands. On the afternoon of 2 May *Yorktown's* scouts found an enemy submarine barely 30 miles north of the task force. Lt(jg) S W Vejtasa and Ens H N Ervin sighted the wake of I-21 and attacked. The submarine crash dived, so Vejtasa dropped a message to *Yorktown* with a location report.

Consequently, three TBDs under Lt(jg) Tom Ellison launched to pursue the contact. He, Ens G E Bottjer and Gunner J C Livezey found I-21 surfaced again and attacked as it dived. Their depth charges scored near misses but no damage was inflicted.

Postwar evaluation showed that I-21 thought that the VT-5 aeroplanes were shored based, as they were within range of Australia and Noumea.

Events accelerated two days later, when Torpedo Five contributed a dozen TBDs to the *Yorktown* strike against Tulagi, launching south of Guadalcanal at 0645 on the fourth. The SBDs overtook the slower 'torpeckers' en route north, but no Wildcats were allotted for escort, as task force defence had priority.

VT-5 Tulagi First Torpedo Attack – 4 May 1942

Sqn No	BuNo	Pilot	Gunner
1	0319	Lt Cdr J F Taylor	ACRM H S Nobbs
2	-	Lt(jg) T B Ellison	-
3	-	Lt A B Furer	-
-	-	Lt L E Ewoldt	RM3c R A Machalinski
7	-	Lt Edwin B Parker Jr	-
11	0286	Ens George E Bottjer	-

Note: Six other aircraft and crews unknown

VT-5 Tulagi Second Torpedo Attack – 4 May 1942

Sqn No	BuNo	Pilot	Gunner
1	0319	Lt Cdr J F Taylor	ACRM H S Nobbs
-	-	CAP Edward J Williamson	-
-	-	Lt L E Ewoldt	RM3c R A Machalinski (ditched)
-	-	Lt E B Parker Jr	-

Note: Seven other aircraft and crews unknown

The 'Yorktowners' found several Japanese ships unloading at Tulagi, and VT-5 followed Scouting Five in the attack at about 0815. Joe Taylor's crews went for three ships but suffered repeated Mk 13 torpedo failures. Only one hit was scored from 11 drops (0286's failed to release), beaching the destroyer *Kikuzuki*. The strike recovered at 0930 and preparations began for a second launch some 90 minutes later.

The follow-up attack did no better. Eleven VT-5 aeroplanes went after a manoeuvring destroyer which dodged all torpedoes. Pulling away from Tulagi, Torpedo Five was jumped by some aggressive Japanese floatplanes which no American had seen before. A VF-42 division was sent to settle accounts, and did so. Thus did the Mitsubishi Type 0 observation aircraft (later code-named 'Pete') make its debut.

Although VT-5 got away clean, one crew became separated when its radio and direction finder failed in heavy weather. Lt Leonard H Ewoldt was joined by the four VF-42 Wildcats, searching for *Yorktown* below the cloud deck, but after three hours aloft the TBD was desperately short of fuel. Ewoldt turned back and ditched off Guadalcanal's south coast, and two of the F4Fs bellied in ashore. Both fighter pilots were rescued by the destroyer *Hammann* (DD-412), but the TBD crew was not so fortunate.

Lt Ewoldt and Radioman 3rd Class Machalinski deployed their rubber raft, hoping for an early rescue. However, the only ship they saw in three days afloat was a Japanese destroyer, which passed them by. Eventually reaching shore, the fliers were taken in by coastwatchers and friendly natives who gave as much assistance as possible. Keeping ahead of searching Japanese, they eluded capture long enough to devise an escape plan. Equipped with a 45-ft schooner, plus 'an old sextant, a worn star almanac and some hand-drawn charts', Ewoldt and Machalinski set sail for Efate in the New Hebrides. With a 'crew' of Chinese refugees, the Americans navigated for 11 days before crossing paths with the destroyer *Paul Jones* (DD-230). By the time they returned to Pearl Harbor, Ewoldt and Machalinski had been away from *Yorktown* for two months.

Optimistic assessment of the Tulagi strike heralded the demise of seven ships, plus one beached and two damaged. In fact, a destroyer and three minesweepers comprised the total bag, and despite the claims, TBD torpedoes had scored only twice in 36 sorties at Lae and Tulagi. Counting the February strike on Kwajalein, PacFleet TorpRons only achieved three hits from 44 drops in 45 sorties – less than seven per cent effectiveness.

The stage was now set for a greater test.

CORAL SEA

The Coral Sea, bordering Australia and New Guinea between the Equator and the Tropic of Capricorn, has been described as one of the world's most beautiful bodies of water. But the area's serenity was violently disturbed during two days in May 1942 when US and Japanese aircraft carriers clashed in the world's first 'flattop' duel. TBDs played a major role in the curtain raiser on this new form of martial art.

Yorktown's Tulagi raid was related to Japanese expansion into the Southwest Pacific. Strategically, Japan hoped to seize Port Moresby, New Guinea, as an overture to Australian conquest, but Allied intelligence had sniffed trouble in the wind and, consequently, *Lexington* and *Yorktown* were sent to deal with the threat.

Supporting the Japanese thrust were three carriers – the small *Shoho* escorting the invasion transports, and the 5th Carrier Division composed of *Shokaku* and *Zuikaku*. As events developed, Rear Adm Frank Jack Fletcher's *Yorktown* group and Rear Adm Aubrey W Fitch's *Lexington* group – collectively Task Force 17 – would engage the enemy piecemeal on two successive days.

Both sides missed early opportunities. *Shokaku* and *Zuikaku* launched an overwhelming strike early on 7 May which sank Fletcher's oiler *Neosho* (A0-23) and destroyer *Sims* (DD-409), thinking them a carrier and a cruiser. Meanwhile, a *Yorktown* SBD some 200 miles north-west of TF-17 found two cruisers and two destroyers. An encoding error in transmission gave the alarming report of two carriers with four cruisers and three destroyers, and that was the data upon which Fletcher and Fitch acted.

Original concern about the range almost prevented the TBDs from launching, but by the time both air groups were ready, both VT-2 and -5 were included in the 170-mile strike. *Lexington's* 'torpeckers' flew with full three-man crews while the 'Yorktowners' kept the centre seat vacant.

The carriers began launching 93 aircraft shortly past 0900, including 22 Devastators. Cdr William B Ault's *Lexington* Air Group was first off, forming up overhead the ship and setting course at 0947.

Yorktown's squadrons set out independently, the SBDs launching first at 0945 for a long climb to altitude, while Joe Taylor's ten TBDs hugged the waves. The strike overflew the Louisiades and penetrated a cold front, emerging into clear weather by the time the Japanese were found.

Fortunately, the scout's erroneous report was corrected while the two

Enterprise TBDs, photographed on 11 April 1942, display the variety of national insignia common in the fleet at that time. The VT-6 Devastators show both large and small fuselage stars, as well as individual aircraft numbers forward and aft of the national emblem. Black 7 is almost certainly BuNo 0294 assigned to Lt(jg) R E Laub, and No 8 is probably BuNo 0367 of Ens W W Creamer. The latter TBD was lost with VT-6 at Midway, while the former was destroyed with Torpedo Eight (*USN via the Naval Aviation Museum*)

TORPEDO SQUADRON TWO ATTACK ON *SHOHO* – 7 MAY 1942

Sqn No	Pilot	Observer	Gunner
T1	Lt Cdr J H Brett Jr	ARM1c A D Hensley	AOM2c D F Hallock Jr
T2	Lt(jg) L F Steffenhagen	ARM3c RJ Pacini	AOM3c A L Beene
T3	Ens N A Sterrie	Sea1c E V Cosgrove	AOM3c H F Wells
T4	Lt R F Farrington	ARM3c W N Nelson	AOM2c T R Wiebe
T5	Ens T B Bash	RM3c W F Johnston	AOM3c L C Kleinow
T6	Ens H R Mazza	Sea2c D M Manion	Sea1c O D Clayton
T7	Lt E W Hurst	ARM1c W J Gilstrap	AOM3c R J Shanley
T8	Ens C Hamilton	ARM3c J E Blank Jr	AOM2c G Deviney
T9	Gunner H E Talkington	Sea1c D Baskin	AOM3c C A Beene
T10	Lt(jg) L W Thornhill	AMM2c A J Cooper	AOM2c W T Glover
T11	Rad Elec J E Mattis	ARM3c F D Kreeger	?? L E Bartel
T12	CAP M H Georgius	Sea2c R R Ghilardi	AOM3c N I Auld Jr

air groups were en route. Amplified by USAAF B-17s, the contact was amended by *Yorktown* radio to the strike, which shifted aim 30 miles to tackle the *Shoho* force and her transports. From their vantage point, the leading SBD pilots could see a flightdeck and four cruisers as the light carrier turned north-west in anticipation of the impending action.

Lexington Air Group initiated a peacetime style attack which, for the first and only time in the war, succeeded completely. At 1107 the 13 CAG and VS-2 Dauntlesses dived straight in while Bombing Two swung eastward to co-ordinate with VT-2, according to doctrine. Only six enemy fighters were airborne during the attack, three of which were 'splashed' by the escorting Wildcats. And though *Shoho's* evasive port turn threw off the first SBDs, Bombing Two scored just minutes later.

As Jimmy Brett led his 12 Devastators into the attack, the two leading Japanese cruisers opened up with an accurate anti-aircraft fire. TorpRon Two then skirted the enemy screen at its widest gap, approaching *Shoho* from abeam. Facing reduced flak, the TBDs gained an angles advantage as the carrier turned to port and Brett directed a split or 'anvil' attack at about 1115 – just before VB-2 bombs started raining down on the CAL (carrier). The co-ordination could hardly have been better, and not even sporadic Japanese fighter passes seriously interfered with the attack.

Brett's crews saw the 11,200-ton carrier rocked by bomb hits and near misses that 'caused billows of black smoke which formed a very good smoke screen'. The CO dropped his Mk 13 from *Shoho's* port beam at 1119, and eight more 'fish' entered the water in the next three minutes. As the target steamed south-easterly, the anvil closed, netting at least five hits, although VT-2 claimed nine. Following Brett into the attack, Lt(jg)s L F Steffenhagen and Lt R F Farrington also scored confirmed hits.

Driving in from the starboard side, led by Lt E W Hurst, Lt(jg) L W Thornhill and Warrant Gunner H E Talkington also put their torpedoes into the target. Flooding and burning, with her steering wrecked, *Shoho* was doomed. Concluded historian John B Lundstrom, *Lexington* Air Group's attack was 'a masterpiece'.

But the strike was only half finished. *Yorktown* Air Group was just minutes behind, and as the SBDs rolled in, VF-42's executive officer,

TORPEDO SQUADRON FIVE ATTACK ON *SHOHO* – 7 MAY 1942

Sqn No	BuNo	Pilot	Gunner
1	0319	Lt Cdr J Taylor	-
2	-	Lt(jg) T B Ellison	RM3c E W Jones
3	-	CAP E J Williamson	RM3c J B Crawford
4	-	Lt A B Furer	-
5	0353	Ens F R Sanborn	RM3c J J Burke?
6	-	Lt E B Parker Jr	-
7	-	Ens A J Schultheis	-
8	-	Gunner J C Livezey	-
9	-	Lt(jg) R Denniston Jr	-
10	-	Ens G E Bottjer	-

Lt Cdr J H Flatley Jr, orbited at 10,000 ft. He coached Torpedo Five onto an attack heading as Joe Taylor's ten aeroplanes approached from low level, although *Shoho's* boiling smoke certainly made target acquisition easier. Penetrating the cruiser screen from the starboard side at 1129, VT-5 dropped from so close aboard 'as to make it almost impossible to miss', said the action report, claiming 100 per cent hits. In fact, most torpedoes did miss, but at least two found their mark. Little *Shoho* was left a burning wreck as the attackers pulled away. Flatley concluded that most of CV-5's strike should have attacked undamaged ships.

The two TBD squadrons got mixed up at the rendezvous, returning with elements of each in both formations. However, all 22 'torpeckers' and the fighters were back aboard their respective ships as ceilings lowered over Task Force 17. Total US losses amounted to three *Lexington* SBDs.

Torpedo Two and Five had much to celebrate – they claimed 19 hits from 22 drops, and although they probably 'only' scored seven, it was enough. *Shoho* had sunk no more than 20 minutes after the combined bombing-torpedo attack began. The Port Moresby invasion, deprived of its air power, was cancelled. But 'round two' of the first carrier battle would be fought the next morning.

Two *Yorktown* squadron commanders after the Coral Sea battle – Lt Cdrs William O Burch of VS-5 (left) and Joe Taylor (right), who led VT-5 throughout its wartime career. Taylor's squadron logged 38 per cent of all TBD combat sorties, with missions at Jaluit, Lae, Tulagi and the two-day carrier engagement of 7-8 May 1942. His crews also participated in an anti-submarine action shortly before the Coral Sea clash (*Douglas Aircraft via the Naval Aviation Museum*)

'ROUND TWO'

The 8th dawned clear over the US task force, and *Lexington's* scouts rose with the sun to find Rear Adm Chuichi Hara's Carrier Division Five. A VS-2 Dauntless radioed a contact report at 0820 – 'Two enemy CVs, four CAs, many DDs', north-northwest of TF-17. That was the good news. The bad news – *Shokaku* and *Zuikaku* were already launching against the Americans.

Forty minutes of frantic flight-deck activity preceded Task Force 17's launch as the range closed to

TORPEDO SQUADRON FIVE ATTACK ON *SHOKAKU* – 8 MAY 1942

Sqn No	BuNo	Pilot	Gunner
1	0319	Lt Cdr J F Taylor	-
2?	-	Lt(jg) T B Ellison	-
3?	-	CAP E J Williamson	-
4?	-	Lt A B Furer	-
5	0353	Ens F R Sanborn	RM3c J J Burke
6?	-	Lt E B Parker	-
8?	-	Gunner J C Livezey	-
9?	-	Lt(jg) R Denniston Jr	-
10?	-	Ens G E Bottjer	-

about 170 nautical miles. *Yorktown* was first off with 39 aeroplanes at 0900, including nine from VT-5. Cdr Taylor kept his Devastators low – at about 200 ft – while a VF-42 division weaved above them to avoid leaving the 105-knot TBDs far behind. Less than ten minutes later *Lexington* began launching 36 aircraft. Lt Cdr Brett took his dozen Torpedo Two TBDs up to 6000 ft, closely escorted by four F4Fs which matched the 'torpeckers'' sluggish speed. However, Lt(jg) Steffenhagen in T2 aborted with magneto problems. He jettisoned his torpedo and returned to 'Lex'.

Proceeding independently, and hampered by heavy clouds, there was no cohesion between air groups. Although Jim Flatley's previous recommendation for a tactical co-ordinator had yet to be acted upon, the 'Yorktowners' got a bit of help when the Scouting Two SBD which had made first contact with Hara's force came upon VT-5. The Dauntless pulled alongside Taylor's 5-T-1 and provided a more specific heading to the target, before banking away toward *Lexington.*

That was about the last good luck of the day. *Yorktown's* SBDs, cruising at 18,000 ft, spotted their prey through the clouds 90 minutes after launch. Most of the 13 CAP Zeros were well below or still on deck, but the scout-bombers marked time for the TBDs. Lt Cdr W O Burch Jr, VS-5's skipper, wanted a co-ordinated attack according to doctrine, but he feared 'Sho' and 'Zui' soon would disappear into a squall line. He radioed Taylor, 'Time's a-wastin'!' Although VT-5 responded as best it could, a full 30 minutes elapsed before the TBDs arrived.

It was nearly 1100 when Burch heard from Taylor and led the scouts down on *Shokaku.* Bombing Five, caught out of position, regrouped before rolling in. Dogged by Zeros and AA fire, the SBDs were also frustrated by fogged sights in the warm, moist air. Still, VB-5 scored two hits on the big carrier while losing two aeroplanes and crews.

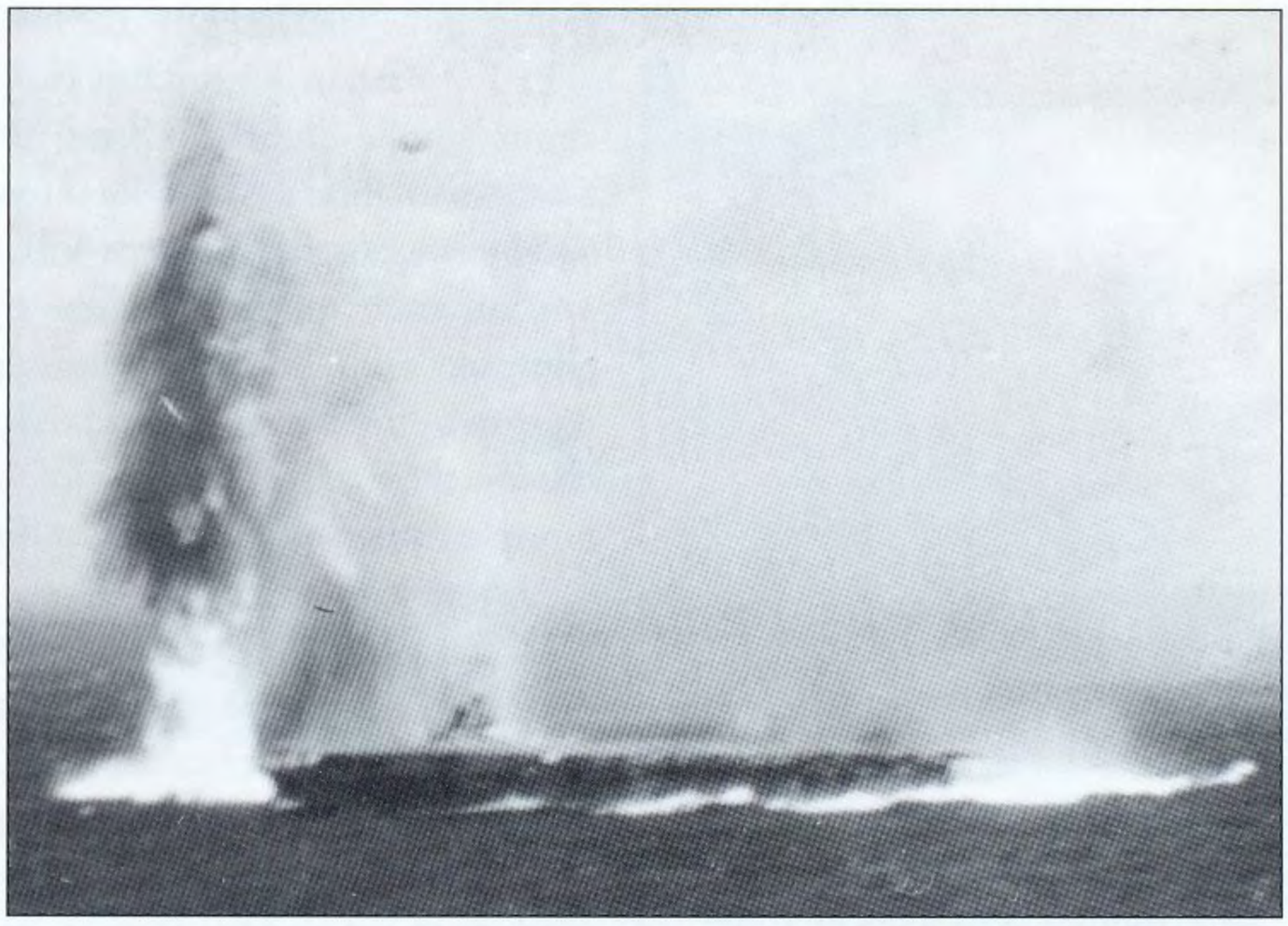
Approaching CarDiv 5 from the south-east, Joe Taylor first sighted a destroyer in the screen, which included six destroyers and two cruisers. The skipper noted that 'AA fire from the CAs (destroyers) was very heavy and quite accurate', so he deployed his squadron against the trailing carrier, *Shokaku.* He led his TBDs into a descending port turn from 200 ft down to 50 ft, increasing speed to 110 knots. His second division, led by Lt E B Parker, pulled abeam for a 'company front' attack. They drew immediate attention from the Japanese combat air patrol, but Lt(jg) W N Leonard's VF-42 division intervened, 'splashing' one and driving

off others. It was the second time in five days that Torpedo Five had afforded Bill Leonard's division some profitable shooting.

Taylor now had his Devastators formed line abreast, driving for *Shokaku's* port side just as VB-5 completed its attack. All nine torpedoes were dropped between 1000 and 2000 yards from the target in the face of 'terrific AA fire' that damaged one aircraft. Even without cruisers *Myoko* and *Haguro*, *Shokaku's* own defences were formidable – a lethal mixture of 5-inch dual purpose and 25 mm automatic weapons. Despite the flak and at least three malfunctioning Mk 13s, Torpedo Five claimed three hits. In fact there were none, but bomb near misses were hard to distinguish from torpedo strikes. Jinking radically, the TBDs pulled into the welcome cover of a nearby squall, 'which undoubtedly saved us', Taylor opined.

Lexington Air Group had problems of its own. Cdr William Ault's four-aeroplane section had difficulty keeping VT-2 in sight as ceilings lowered, and Bombing Two became separated completely. Deprived of VB-2's 11 SBDs, Bill Ault and VT-2 CO Jimmy Brett initiated a square search of the target area. They 'flushed game' two-and-a-half hours after launch and prepared to attack with four dive-bombers and 12 TBDs.

Leading Torpedo Two, Brett caught sight of three Japanese ships and began a spiralling glide from 6000 ft, passing directly over two cruisers without attracting attention. Emerging from his descent, he found *Shokaku* about two miles dead ahead and reduced speed from 180 knots to 110 for the run in. But as Brett led VT-2 down through intermittent



The *Shokaku* is seen under attack on 8 May 1942 (the second day of the Battle of the Coral Sea). Poor weather and communications prevented a repeat of the previous day's well co-ordinated attack, which had permitted *Lexington* and *Yorktown* squadrons to sink the light carrier *Shoho* with seven or more torpedo hits. Although 21 VT-2 and -5 TBDs attacked *Shokaku*, none of their torpedoes struck the target, despite wartime claims to the contrary. The ship sustained damage from SBD bombs but survived until June 1944, when it succumbed to a US submarine off the Marianas (*via the Author*)

TORPEDO SQUADRON TWO ATTACK ON *SHOKAKU* – 8 MAY 1942

Sqn No	Pilot	Observer	Gunner
T1	Lt Cdr J H Brett Jr	ARM1c A D Hensley	AOM2c D F Hallock Jr
T2	Lt(jg) L F Steffenhagen (aborted)		
T3	Ens N A Sterrie	-	-
T4	Lt R F Farrington	-	-
T5	Lt T B Bash	-	-
T6	Ens H R Mazza	-	-
T7	Lt E W Hurst	-	-
T8	Ens C Hamilton	-	-
T9	Gunner H E Talkington	-	-
T10	Lt(jg) L W Thornhill*	AMM1c J C Heldoorn*	AOM2c W T Glover*
T11	Radio Elec J E Mattis	-	-
T12	ACMM (NAP) B C Shearon	-	-

Note: Aircrew killed in this action are marked with an asterisk

clouds and squall lines, two of his TBDs got separated from the others.

Lt T B Bash in T5 and Ens N A Sterrie in T3 emerged from the clouds about a mile ahead of Brett, where Bash was attacked by some of *Shokaku's* fighters. Amid the interceptors and small calibre AA fire, Bash and Sterrie closed to perhaps 400 yards before dropping their torpedoes – one off each quarter. Lighter by a ton, Bash accelerated away and glimpsed a hit on the carrier's stern. 'I do not think I got a hit', he reported, 'for I was far too busy with two Zero fighters on my tail to observe the track of my torpedo'. His predicament was quickly alleviated, however, when a VF-2 Wildcat disposed of one Japanese interceptor.

Although they failed to score, Bash and Sterrie had contributed to VT-2's attack. Their end run around *Shokaku's* port beam apparently prompted the ship to turn starboard, broadside to Brett. Penetrating an aerial carpet of flak bursts, the Devastators dropped at 1000 yards or more. Harried by Zeros and perhaps distracted by flak, VT-2 claimed five hits in addition to the bomb hit by Ault's section. But no torpedoes struck *Shokaku* this day. That fate awaited her two-and-a-half years hence.

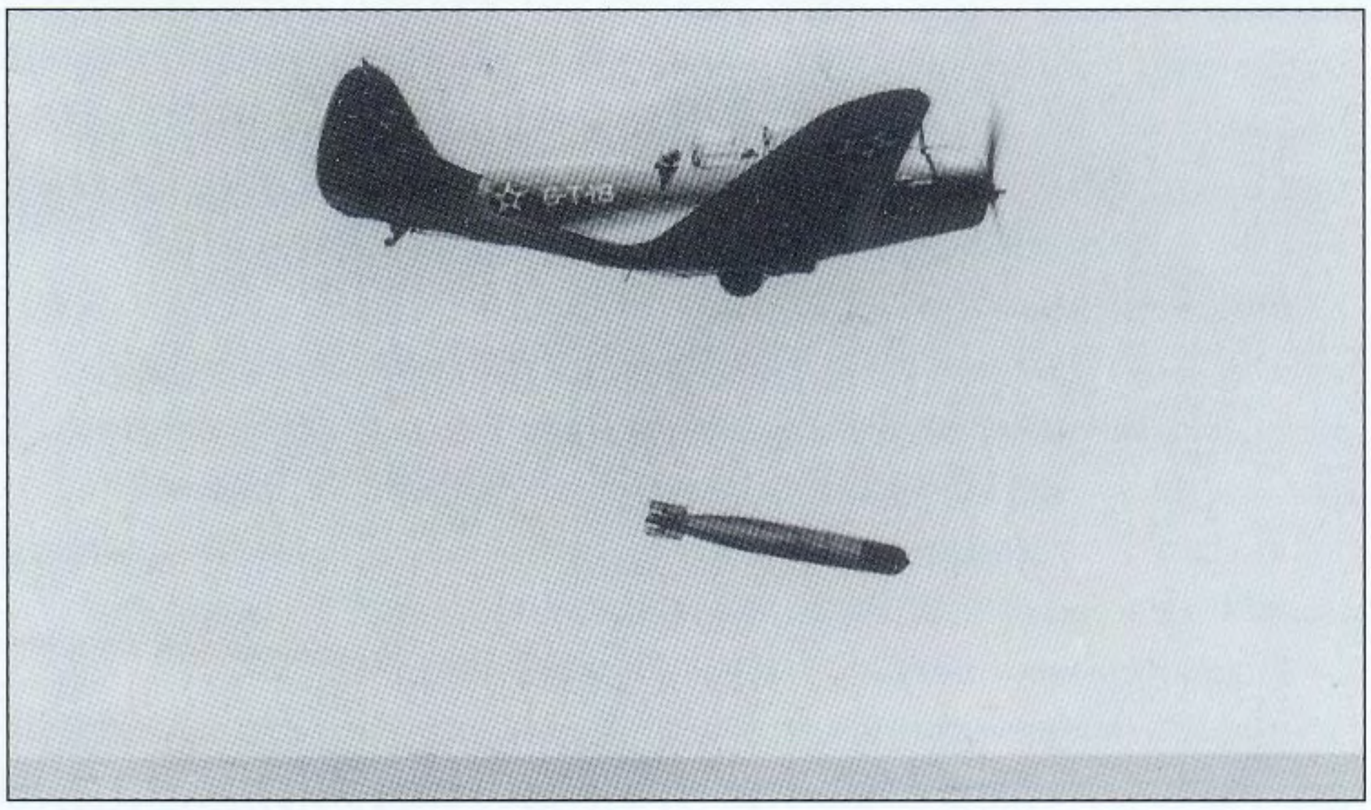
Lt Noel Gayler's VF-2 division fought to keep the Zeros off the Devastators, but paid a stiff price. Two Wildcats succumbed to the aggressive Mitsubishis, having failed to maintain airspeed in close escort. Brett collected nine TBDs east of the target area and headed south for home. But perhaps 50 miles en route, he was jumped by 'a squadron of about 12 Type 97 fighter airplanes'. The skipper might be pardoned the exaggeration. Four Zeros returning from the attack on TF-17 made repeated gunnery runs, and the lone VF-2 Wildcat escort was out of ammo. But Torpedo Two descended to minimum altitude, precluding high angle dives by the bandits, and adopted a stepped down defensive formation.

The wave-top shootout continued for a few minutes, with the gunners exchanging fire with the slashing fighters. Two of the assailants were thought shot down, and although no kills can be confirmed, VT-2 had done well. Four Zeros against nine TBDs was not always an equal contest.

VT-2 continued for 'Lex', nursing a worsening fuel situation. Lt(jg) Leonard W Thornhill (in T10 BuNo 0273) ran dry 20 miles from base and he ditched with his crew, AOM2c W T Glover and AMM1c J D Heldoorn. Although a destroyer searched for them, no trace was ever found.

Brett closed on *Lexington* and, mindful of Thornhill's fate, ignored the required recognition turns of the day. Consequently, some TF-17 ships potted away at the TBDs, but all got aboard safely, including Bash and Sterrie, who trapped a few minutes later. It had been a five-hour mission – the longest ever flown by Devastators. *Lexington* Air Group had lost its CAG with three SBDs and four F4Fs, in addition to Thornhill's TBD, while *Yorktown* was short two SBDs and an F4F, but all her Devastators returned.

However, 'Lex' was in trouble. The Japanese strike had arrived three hours previously, and it had



An *Enterprise* TBD launches a Mk 13 torpedo during exercises in October 1941. The release altitude is about 40 ft, which was within recommended parameters, but which many fleet aviators regarded as somwhat high for efficient water entry. Airspeed was between 110 and 125 knots (*via Peter Mersky*)

scored. *Lexington* sustained fuel vapour explosions throughout the afternoon and, early in the evening, she was abandoned. The grand old lady ended her 15-year career that night, torpedoed by one of her escorts. *Yorktown* suffered bomb damage, but she would fight again.

Total TBD losses at Coral Sea amounted to all 12 VT-2 aircraft. Two were lost operationally and ten sank with *Lexington* – 0271, 0275, 0290, 0291, 0300, 0320, 0339, 0345, 1514, and 1516.

A later shot taken in the sequence showing a VT-6 SBD-1 dropping a Mk 13 torpedo on 20 October 1941. Less than eight months after these peacetime photos were taken, this unit would lose 11 of 14 Devastators sortied during the Battle of Midway in a near-suicidal series of torpedo runs on the carrier *Kaga* (*via Peter Mersky*)

In exchange, the two TorpRons claimed 27 hits on two Japanese carriers on 7-8 May, plus two enemy fighters 'shot down'. Although greatly exaggerated, the actual results – seven hits on one ship and no shootdowns – did give reason for optimism. A light carrier had been sunk, the first significant Japanese combatant lost in the war. But obscured in history is the fact that, after five months of combat, TBDs had sustained no in-flight losses to enemy action. The type had proven rugged enough to survive battle damage and, in favourable conditions, could deliver effective torpedo attacks. Its main drawback was ponderous speed, both in cruise and attack, which complicated escort by fighters.

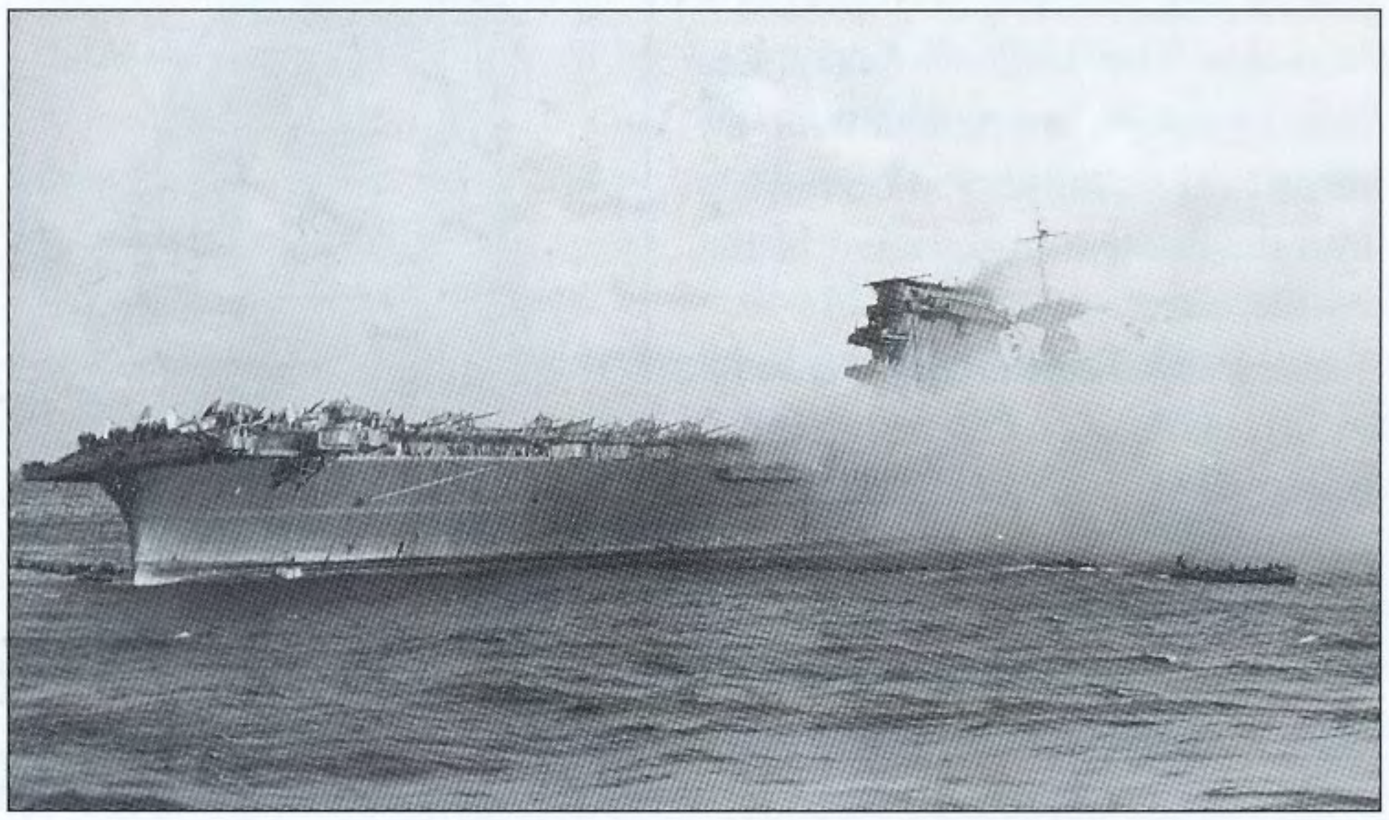
Coral Sea proved the importance of co-ordinated air group tactics in achieving torpedo success. On 7 May VT-2 and -5 dropped 19 torpedoes for 7 confirmed hits – a 36.8 per cent success rate. The next day, deprived of co-ordination with the SBDs, those same units missed with 20 Mk 13s.

Although VT-2 and -5 lingered on paper for several months, Coral Sea marked the end of their fleet service. However, they left some conclusions and recommendations for other torprons, and with advantage of hindsight, the validities and errors are apparent. For instance, Torpedo Two stated the importance of penetrating a Japanese carrier's screen where AA was lightest, and that 'fighter opposition usually can be expected'. However, the report optimistically stated, 'the fighter will only have time for one run during the approach of the torpedo planes'.

Torpedo crews advised against launching TBDs more than 160 miles from the target, and favoured 150 miles on opposed strikes. 'This latter distance may develop into the 160-mile maximum if the weather is poor and a search is necessary to find the enemy', noted Lt Cdr Brett.

While absorbing recent combat lessons, the Pacific Fleet torpedo squadrons had greater confidence in the future, as Grumman's new TBF-1 Avenger was about to enter fleet service. But before that transition occurred, one final test of the Devastator lay ahead.

'Lady Lex' in her death throes on 8 May 1942. The victim of a combined Aichi D3A dive-bomber and Nakajima B5N torpedo-bomber strike from *Shokaku* and *Zuikaku*, the 15-year veteran of the US Pacific Fleet sank with most of he r aircraft still aboard – including 12 VT-2 Devastators. Most of these can be seen parked aft on the flightdeck as *Lexington* lists to port, burning from two torpedo and two bomb hits. Despite damage control efforts, a major explosion occurred four hours after the Japanese attack, dooming the beloved carrier (*via the Author*)



MIDWAY

An April intelligence briefing for aircrews did not engender confidence among Pacific Fleet squadrons. VT-3 radioman Lloyd F Childers was among those who heard a staff officer state that a 15-strong TBD squadron attacking an enemy carrier could expect just three aeroplanes to penetrate the defences and launch torpedoes. He recalled;

'This bleak forecast unnerved me considerably. However, as we walked out of the room, everyone else seemed to be joking about it. I thought, "Well, if the others can do it, I can, too".'

Following the Coral Sea battle the next month, the relative success of VT-2 and -5 lent some badly needed optimism. Childers said;

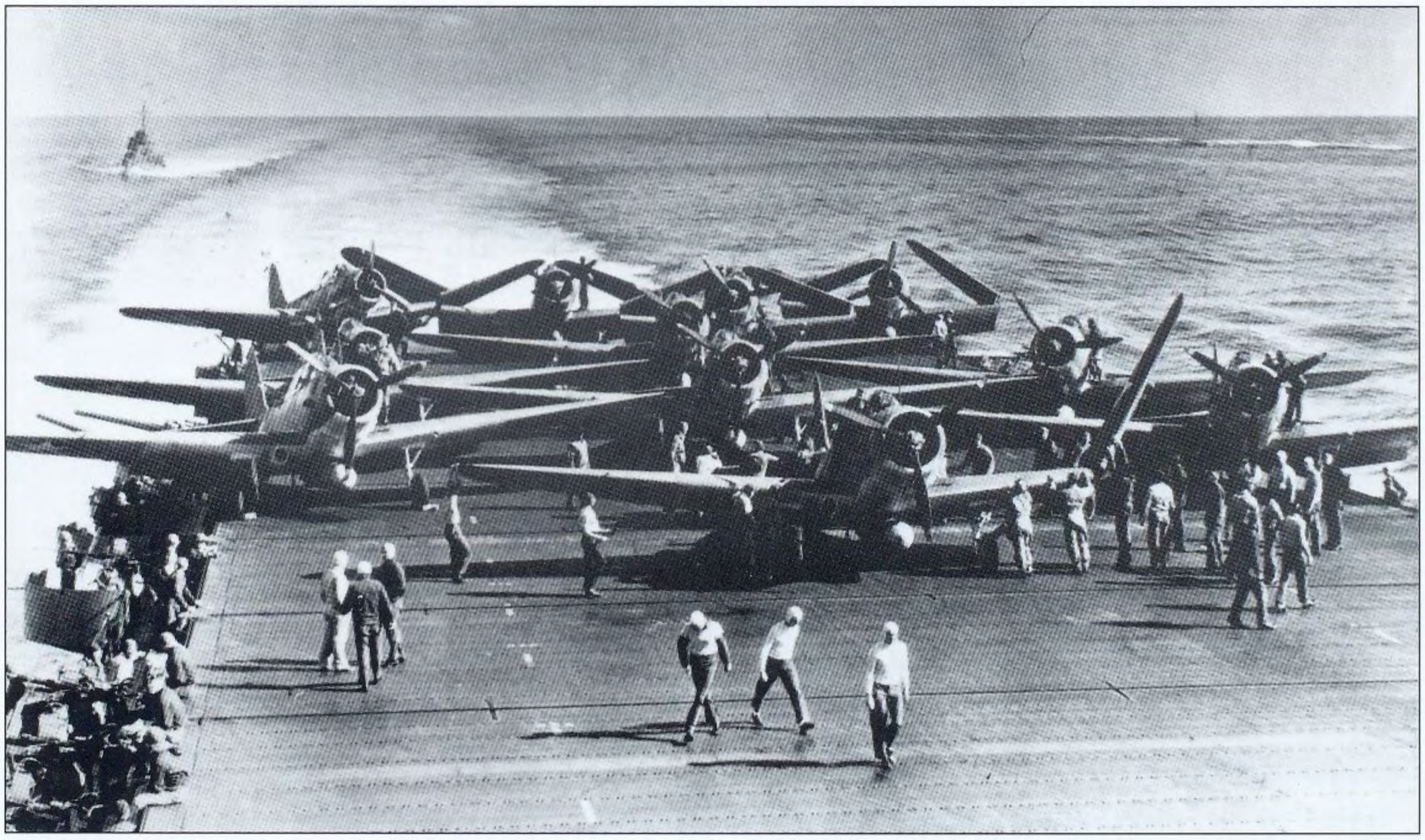
'The reports that came back to us indicated that the Japanese Zeros concentrated on our dive-bombers, and more or less ignored the TBDs. This report was very encouraging. Perhaps that intelligence forecast was wrong!'

Yorktown returned to Pearl Harbor on 27 May and immediately went into dry dock for such repairs as could be accomplished in 72 hours. Her air group was reshuffled, with *Saratoga* squadrons replacing most of the resident units. Thus, Torpedo Three relieved VT-5, and although VT-3 had not yet seen action, it was led by Lt Cdr Lance E Massey from the Annapolis Class of 1930. At age 32, Massey was the junior TorpRon skipper in the Pacific Fleet, but he was among the most experienced. He had become CO in April following his previous stint as 'exec' of Torpedo Six.

In *Enterprise*, the TBDs still were led by Lt Cdr Eugene Lindsey (USNA 1927), who had been with Torpedo Six since the war began. But the third element of the carrier striking force building at Pearl was almost completely new. Hornet's VT-8 was merely eight months old. Its only operational experience was riding along on the Doolittle raid in April, when some of Lt Cdr John C Waldron's pilots logged their first traps. Despite being 'green as grass', they were, according to one witness, 'eager as hell'. It was just as well, for the next stop was Midway. The Imperial Navy was coming out in strength, intent on forcing the outnumbered US carriers into the decisive engagement of the Pacific War.

Ironically, Torpedo Eight entered its first battle with TBDs and TBFs, flying from ship and from shore. Beginning VT-8's transition to Avengers, the Grumman contingent barely missed *Hornet's* departure from Norfolk, Virginia, six aeroplanes arriving at Midway from

Chief Aviation Pilot Wilhelm G Esders was one of the most experienced of VT-3's aviators by the time of the Battle of Midway. Having joined the squadron in 1938, he was well versed in torpedo tactics and, when Lt Cdr Massey was shot down during the attack on IJNS *Hiryu* on 4 June, Esders assumed the lead. He was one of only five of Torpedo Three's twelve pilots who was able to drop his torpedo amidst a tenacious Japanese defence of fighters and flak. Esders ditched his damaged TBD near the US task force and extracted his wounded gunner, who died shortly thereafter (*Naval Aviation Museum*)



Enterprise **plane handlers spot VT-6 aircraft for launch during the Battle of Midway on 4 June 1942. The 11 Devastators shown here were joined by three more before launching commenced that morning. Only four returned to 'The Big E', leaving 18 pilots and aircrewmen lost in action. *Hornet* lost 29 men from 15 TBDs and *Yorktown* 21 from 12 aircraft (*USN via the Naval Aviation Museum*)**

Ford Island in time for the battle (see *Osprey Combat Aircraft 16 - TBF/TBM Avenger Units of World War 2* for further details). Alhough the TBF was a generation or more beyond the TBD, the paper superiority would prove non-existent at Midway. Both aeroplanes were forced to use the Mk 13 torpedo, and that lamentable weapon's launch parameters dictated tactics.

Enterprise and *Hornet* sortied 28 May as Task Force 16, two days ahead of *Yorktown's* TF-17. The air groups flew out to the ships and recovered safely with one exception – Gene Lindsey, skipper of VT-6, spun into *Enterprise's* wake and lost BuNo 0370. The CO and both his crewmen were recovered, although Lindsey sustained injuries which ordinarily would have grounded him. However, he had other plans.

RECKONING

At dawn on 4 June, 41 of the torprons' 45 Devastators were operational – an in commission rate of 91 per cent. The Japanese carriers had been located southwest of Midway, and Task Force 16 began launching at 0700 – *Hornet* first, followed by *Enterprise*. Cdr Waldron, the leathery 41-year-old skipper of VT-8, took his 15 aeroplanes outbound at 1500 ft, flying in a V formation. Most of his pilots were brand-new ensigns, but they all got off safely.

The 'Big E's' launch then broke down, and nearly an hour passed before Torpedo Six's TBDs could be spotted for a deck launch. Meanwhile, the injured Gene Lindsey, a veteran aviator out of the Annapolis Class of 1927, climbed to 2000 ft and led his 14 aeroplanes separately from *Enterprise's* SBDs and fighters, much as Waldron had been forced to do. VT-6 was echeloned left and right by divisions led by the CO and XO, respectively. Largely on their own, the 'torpeckers' settled down for the 140-mile flight under broken low clouds in bright sunshine, with a light wind out of the north-east.

TORPEDO SQUADRON EIGHT – 4 JUNE 1942

First Division

Sqn No	BuNo	Pilot	Radioman-Gunner
T-16	1506	Lt Cdr J C Waldron*	ACRM H F Dobbs*
T-2	0276	Lt R A Moore*	ARM1c T H Pettry*
T-3	0297	Ens W R Evans Jr*	ARM3c R E Bibb Jr*
T-4	0321	Ens H J Ellison*	ARM3c G A Field*
T-5	0308	Lt(jg) J D Woodson*	ARM2c O D Creasy Jr*
T-6	0293	Ens W W Creamer*	Sea2c F S Polston*
T-7	0284	Ens J P Gray*	ARM3c M A Calkins*
T-8	0324	Ens U M Moore*	ARM3c W F Sawhill*

Second Division

Sqn No	BuNo	Pilot	Radioman-Gunner
T-9	0295	Lt J C Owens Jr*	ARM1c A Maffei*
T-10	1509	Ens H R Kenyon Jr*	ARM3c D L Clark*
T-11	0364	Lt(jg) G M Campbell*	ARM2c RJ Fisher*
T-12	0311	NAP1c R B Miles*	Sea2c A L Picou*
T-13	0372	Ens W W Abercrombie*	ARM2c B P Phelps*
T-15	0329	Ens G W Teats*	ARM2c H Martin*
T-14	1518	Ens G H Gay	ARM3c R K Huntington*

Note: Aircrew killed in this action are marked with an asterisk

TORPEDO EIGHT ATTACKS *SORYU*

John Waldron was the most experienced aviator and the best leader in the *Hornet* Air Group. When the group commander continued a heading of nearly due west, the VT skipper turned about 25 degrees to port and proceeded south-westerly. Confident of his own navigation, he felt that Cdr S C Ring was leading three squadrons well to the north of the Japanese carriers. *Hornet's* F4Fs remained with the SBDs, which hunted more westerly and missed their quarry.

Consequently, only the VF-6 escort remained in position to support either VT-6 or -8. But the Wildcats' higher altitude, the low clouds and poor communications combined with uncoordinated tactics to form a tragic conspiracy. Waldron's and Lindsey's units were committed to an unsupported daylight attack against an alerted, powerful carrier force.

Well en route to the target's suspected position, Waldron noted a Japanese floatplane which, he correctly assessed, notified its ship of VT-8's approach. The leading TBDs thereupon formed a scouting line for a wider search and found the enemy at 0915, some 95 minutes after launch. Waldron deployed Lt James C Owens' division to starboard and drove toward the southernmost carrier, *Soryu*, approaching almost head on while working up to 34 knots.

The first attacks by some 27 CAP Zeros began about eight miles out, and they quickly, expertly, began thinning Waldron's ranks. Although Torpedo Eight had mounted twin .30-cals for the gunners and armoured seats, the modifications helped little. Waldron's aeroplane, T-16, was

about the fourth splashed, and by the time the preferred 800-yard drop range was reached, only one VT-8 TBD-1 was still flying.

Twenty-five-year-old Ens George Gay, the squadron's navigation officer in T-14, had been backing up Waldron during the outbound leg. But now, with a dead gunner, a sky full of interceptors and a wall of flak, his options were severely limited. Gay's electrical release failed so he dropped manually from the starboard side, pulled up over the flightdeck and turned hard-a-port down *Soryu's* wake. By then his ailerons and rudder had been shot out and, emerging from the seething cauldron of white splashes and coloured tracers, he was jumped by more Zeros. BuNo 1518 caught a wing and cartwheeled into the water, slamming the canopy shut. Gay, suffering multiple wounds, frantically beat his way out of the cockpit and surfaced next to his raft. He ducked a few strafing passes by vengeful Zeros but soon was left to himself. The CAP had more business.

Fifteen minutes behind Torpedo Eight was Torpedo Six.

TORPEDO SIX ATTACKS *KAGA*

The commanding officer of TorpRon Six, Lt Cdr Gene Lindsey, had injured his back in a recent crash and reportedly had to be helped into 'Six-Tare-One'. But the thought of missing the most important mission of the war probably never occurred to him. He manned up and led VT-6 off the 'Big E's' deck, counting on an escort from Fighting Six to help the 'torpeckers' reach the target.

Torpedo Squadron Six – 4 June 1942

First Division

Sqn No	BuNo	Pilot	Radioman-Gunner
1	0289	Lt Cdr E E Lindsey*	ACRM C T Grenat*
2	1512	Lt(jg) S L Rombach*	ARM2c W F Glenn*
3	0279	Ens E Heck Jr	ARM3c D L Richey (returned)
6	0366	Lt(jg) J T Eversole*	RM2c J U Lane*
9	0378	Lt(jg) R M Holder*	ARM3c G J Durawa*
4	0350	Lt(jg) R E Laub	ARM1c W C Humphrey Jr (returned)
5	0368	Ens I H McPherson	ARM2c W D Horton (returned)

Second Division

Sqn No	BuNo	Pilot	Radioman-Gunner
10	0342	Lt A V Ely*	RM3c A R Lindgren*
11	0338	ChMach S B Smith	Sea2c W N McCoy (returned)
12	0365	Ens F G Hodges	RM2c J H Bates*
13	1505	Lt P J Riley*	ARM2c E J Mushiniski*
14	0327	Ens J W Brock*	ARM3c J M Blundell*
7	0294	Lt(jg) L Thomas*	ARM2c H F Littlefield*
8	0367	Mach A W Winchell	ARM3c D M Cossitt (ditched/saved)

Notes: Aircrew killed in this action are marked with an asterisk

BuNo 0370 was lost on 30 May when Lt Cdr Lindsey crashed during Enterprise Air Group's embarkation just prior to deploying for Midway

About 0930 the 'Big E's' TBD crews spotted smoke to the northwest. Seeing three carriers inside a six- and fifteen-mile outer screen, Lt Cdr Lindsey sent his second division under Lt Art Ely to port. The CO hoped to trap the 38,000-ton *Kaga* in an anvil attack, but the big carrier swung away from her westerly heading to the north, prolonging the approach for both VT-6 divisions. About ten minutes after the initial sighting, the Devastators were discovered and a cruiser opened fire with her '8-inchers' to show the Zeros where to look. Japanese fighter direction, although unsophisticated, proved effective. Like VT-8 before it, Torpedo Six tackled an aroused defence now numbering 34 fighters, in addition to two battleships, three cruisers and a dozen destroyers.

Lt Ely, the executive officer, radioed for the VF-6 escort to 'come on down', but apparently the Wildcats never heard the call. Already concerned about fuel, they orbited overhead for nearly 30 minutes before turning for home. Consequently, TorpRon Six went in alone.

The numbers just didn't work. Forced into a stern chase, the TBDs only had an 85-knot advantage on the 26-knot *Kaga*, their Mk 13s less than that. Lindsey's crews were exposed to AA for around 15 minutes – 16 dual-purpose 5-inch and 22 automatic 25 mm guns on *Kaga* alone. Then the fighters piled in. Although VT-6 also had twin-mount .30-cals, they ceded their tormentors a 200-knot advantage. By ones and twos the TBDs were downed, although at least one gunner scored. ARM1c W C Humphrey in Lt(jg) R E Laub's T-4 'splashed' a Zero that pressed too close, but inevitably the wavetop shootout could only go one way.

No pilot gained more than a 70-degree angle on either bow, nor got closer than 800 yards. Perhaps six torpedoes went into the water, aimed at *Kaga*, but none connected in their 12-ft deep runs. Five aeroplanes cleared the Japanese task force, although Machinist A W Winchell ditched and was rescued with his gunner two weeks later.

Torpedo Six's homing pilots had more than enough trouble. The ship was some 40 miles from the expected 'Point Option', and the combat air patrol proved overly eager following *Hiryu's* strike, which launched immediately after the American attack. *Enterprise* Wildcats made a firing pass on some *Yorktown* SBDs orbiting near Task Force 17, then another F4F jumped a straggling VT-6 TBD. Once aboard, the torpedo pilot, who had just lost most of his squadronmates, reportedly stalked into the fighter ready room still wearing his sidearm.

One of the returning *Enterprise* TBDs was so battered that it was jettisoned. Task Force 16 had launched 29 torpedo aeroplanes that morning. Barely three hours later it had three.

Close behind came Torpedo Three with *Yorktown's* strike.

TORPEDO THREE AGAINST *HIRYU*

Delayed in launching by the recovery of her scouts, CV-5 had made up much of the deficit with a 'running rendezvous'. Contrary to *Hornet's* amateurish decision to launch short-ranged fighters first, *Yorktown* flew off the Devastators, then VB-3's Dauntlesses. With Lt Cdr Lance Massey's TBDs in the lead, followed by VB-3, Fighting Three's six F4F-4s were the last off, but the faster Wildcats joined up en route. Thus, *Yorktown's* scratch-built air group was the only one to achieve anything resembling a co-ordinated strike.

TORPEDO SQUADRON THREE – 4 JUNE 1942

First Division

Sqn No	BuNo	Pilot	Radioman-Gunner
1	0285	Lt Cdr L E Massey*	ACRM L E Perry*
2	0286	CAP W G Esders	ARM2c R B Brazier*
3	0303?	Mach H L Corl	ARM3c L F Childers
4	0310?	Lt(jg) C W Howard*	ARM1c H C Lundy Jr*
5	0312?	Ens L L Smith*	ARM3c R J Darce*
6	0340?	CMach J W Haas*	ARM3c W A Phillips Jr*

Second Division

Sqn No	BuNo	Pilot	Radioman-Gunner
7	0341?	Lt P H Hart*	ARM1c J R Cole*
8	0343	Ens D J Roche*	ARM3c C L Moore*
9	0354?	Ens C A Osberg*	ARM3c R M Hanson*
10	0361?	Lt(jg) R W Suesens*	ARM2c T L Barkley*
11	0375?	Ens O A Powers*	Sea2c J E Mandeville*
12	0381?	Ens W F Osmus*	ARM3c B R Dodson Jr*

Notes: Aircrew killed in this action are marked with an asterisk

BuNo 0333 (extra T-5?) was jettisoned during repair operations on 6 June, while 1511 and 1513 (T-14?) were 'overhead' spares that sank with *Yorktown* on the 7th

The six F4Fs assigned as strike escort were insufficient to the task, as fleet defence rated priority. Therefore, Lt Cdr John Thach kept his four-aeroplane division with the SBDs, while two fighters weaved back and forth near the Devastators.

Leslie and Massey agreed that VT-3 would form the base element, with the SBDs and eventually the F4Fs keeping formation on the TBDs. Flying closer to the water, Massey was better able to gauge the wind by 'reading' the whitecaps, and therefore acted as lead navigator for the air group.

At 1003, about 20 minutes after rendezvousing with the fighters, a VT-3 gunner saw smoke 25 miles to starboard. Radioman Lloyd Childers in Machinist Harry Corl's aeroplane noted the plumes on the horizon, and Corl got the skipper's attention. Massey climbed to 2600 ft for a better look and, seven minutes later, headed for the nearest carrier. As before that morning, one of the *Tone*-class cruisers with their distinctive four forward-mounted turrets fired spotter rounds to alert the fighters.

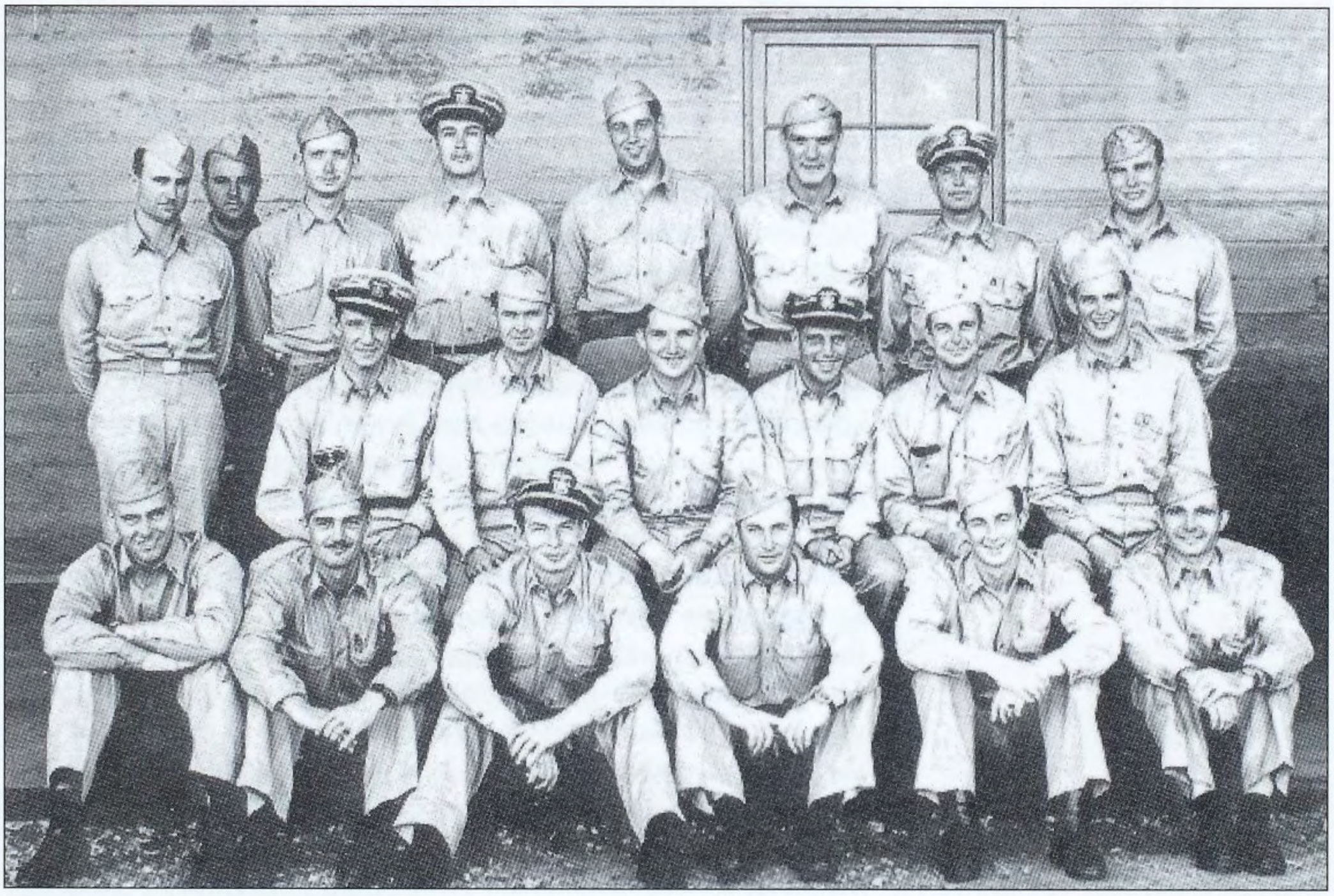
By now some 40 Zeros were airborne as the CAP was constantly reinforced. TorpRon Three descended below some broken low clouds in a stepped down defensive formation just as the VT-6 survivors egressed. But the Zeros quickly shifted targets and buried the 'Yorktowners' in a Mitsubishi avalanche. Lt Cdr Thach's four middle-level F4Fs fought for their lives as the torpedo escort section was also heavily engaged. Leading the latter pair was Machinist T F Cheek, a former Lexington TBD pilot.

Massey dropped to nearly sea level and reduced speed to 110 knots for the attack. He selected the northernmost carrier, *Hiryu*, which turned northwest to force another stern chase. Like VT-6, Torpedo Three split

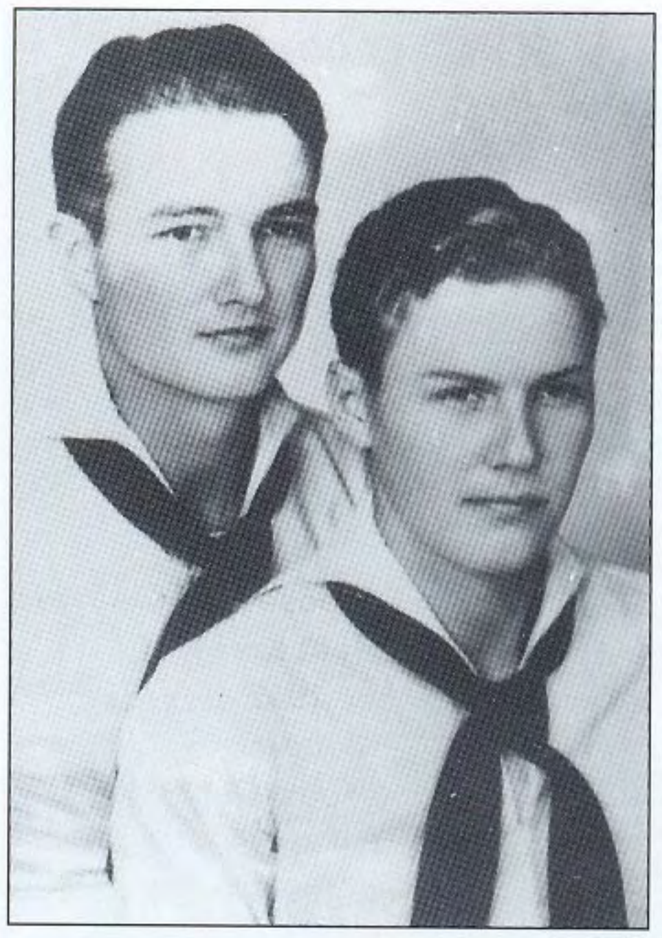
as Lt P H Hart swung wide with his depleted division to attempt a co-ordinated attack from each side. During the run-in the skipper's aeroplane went down, leaving Chief Aviation Pilot W G Esders in the lead. An experienced NAP, Esders led the survivors through determined, slashing Zeros into the muzzle flashes, dirty brown flak bursts and lancing tracers.

Following 20 minutes of agonisingly slow approach, Esders' half of VT-3 dropped five torpedoes from 600 to 800 yards. One of the attackers crashed shortly thereafter, and apparently none of the second division got close enough to drop. Of the four surviving TBDs, one section turned north and disappeared. Esders, pursued by four Zeros, banked hard for the east. Flying at 85 knots, he survived the fighters and escaped in his heavily damaged 0286, being joined by Machinist Corl. His 0303 had been badly shot up during the approach, and to avoid crashing from loss of elevator control, he had been forced to jettison his torpedo. The change in weight and balance brought the TBD's nose up enough to allow Corl to pull out of formation and wait to the north of the battle.

Thach passed Esders' battered TBD en route back to the ship, as five of the six F4Fs had shot their way out of the horde of Zeros. Although the Wildcats were too low on fuel to escort the 'torpeckers', VF-3 had done all anyone could expect. Historian John Lundstrom determined that at least 11 Zeros were shot down during the morning's attacks on Japanese carriers, and the American claims appear accurate. Fighting Three claimed six, with one each by VT-3 and VT-6, and three by *Enterprise* SBDs. For while the torpedo squadrons were slaughtered, VB-6, VS-6 and VB-3 approached undetected, attacked with an unintended co-ordination, and destroyed three enemy carriers. The naval balance had shifted in a matter of minutes.



The pilots of VT-3 pose for a formal group photograph at Kaneohe, Hawaii, on 29 May 1942. Less than a week after this shot was taken, ten of them had been posted Missing In Action (MIA). They are (front row), from left to right, Ens C A Osberg (MIA), Machinist J R Baker, Ens O A Powers (MIA), Ens D J Roche (MIA), Radio Electrician W I Weis and Lt(jg) D E Weissenborn (not at Midway). Middle row, Lt(jg) R W Suesens (MIA), Lt P H Hart (MIA), Lt Cdr L E Massey (MIA), Lt(jg) C W Howard (MIA), Lt(jg) J N Myers (not at Midway) and Lt(jg) F C Herriman. Back row, Machinist L Corl, Ens W F Osmus (MIA), Ens O H Schneider, Ens J M Armitage, Ens G R Stablein, Ens L L Smith (MIA), Chief Machinist J W Hass (MIA) and Chief Avition Pilot W G Esders (*via Mark Horan*)



The Childers brothers, Lloyd (left) and Wayne (right), both served with VT-3 during the Battle of Midway. The former was gunner-radioman for Warrant Machinist Harry L Corl on 4 June, and although wounded in the leg by a Japanese fighter, he survived the ditching of his TBD in the wake of the attack on the *Hiryu* – he was the only gunner-radioman left alive following the mission. Lloyd Childers was informed of the demise of his squadron by his brother; 'I was in the Naval Hospital in Pearl Harbor when my brother walked in. After our greeting I asked him how many of our guys got picked up. Wayne shook his head. I said incredulously, "No one else?" he stated, "No one else; you are the only survivng gunner". I laughed and I cried. It was hard to believe' (*via Mark Horan*)

In his account for the Pacific Fleet Commander, Adm Chester Nimitz, VT-8's Ens Gay omitted any mention of dive-bombers, nor did his article in *Life* magazine refer to SBDs. Decades later he repeatedly described the successful attack by *Enterprise* and *Yorktown* dive-bombers, even insisting that 'some of those boys had never dropped a bomb'. The contradiction has caused confusion among some students constructing a Midway chronology, but a simple time and distance equation demonstrates the perspective. In truth, the Dauntlesses nosed over almost an hour after Torpedo Eight's attack, and Gay, bobbing in his mae west more than 20 sea miles away, could not have observed that critical phase of the battle. From sea level, line of sight is about five nautical miles – the Japanese carriers were far below the horizon by the time VB-6 and VS-6, plus Bombing Three, found their targets.

The surviving VT-3 aeroplanes continued toward the American task force. At noon Chief Esders and his mortally wounded gunner ditched only ten miles from *Yorktown*. Meanwhile, Machinist Corl arrived independently, just as *Hiryu's* strike crippled *Yorktown*. He proceeded toward *Enterprise* but his engine froze from hits in the oil system and he splashed down safely with his gunner. The three survivors of 'Lem' Massey's squadron were rescued, but out of the battle.

Like VT-8, Torpedo Three had failed to recover any TBDs. And like Waldron's ill-fated squadron, a lone aviator remained afloat in hostile waters. The difference was Ens Wesley Osmus lacked George Gay's luck. Osmus was picked up by the Japanese destroyer *Arashi* and interrogated. He revealed that three American carriers were deployed to defend Midway, and that *Yorktown* was operating separately from *Enterprise* and *Hornet*. This intelligence was valuable to the Japanese, who proved ungrateful for the knowledge – Osmus was murdered the next day. A Scouting Six crew was also killed after failing to provide useful information on the American task forces.

TORPEDO THREE REPORT

One of only two VT-3 pilots recovered after the mission was Chief Aviation Pilot Wilhelm G Esders, Lt Cdr Massey's wingman. Esders, who had been in the squadron for four-and-a-half years, submitted the following report two days after the battle;

'Reporting Pilot: Wilhelm George Esders, CAP, US Navy
Plane – TBD-1
Position in Squadron – #2 First Section
Radioman – R B Brazier, ARM2c US Navy

'At approximately 1040, June 4, 1942, Torpedo Squadron Three departed USS *Yorktown* to attack Japanese ships. Carriers being our first objective. The squadron rendezvous was made and we proceeded to our objective in the company of Bombing Squadron Three. We started climbing as soon as the squadron completed the rendezvous, climbing to 1500 ft, which was the base of the scattered clouds. At about 1105, six fighters from Fighting Squadron Three joined us.

'At 1135, we sighted three dense columns of smoke to our northwestward, distance about 20 to 25 miles, at which time we changed course in that direction. We also started to climb again as we were now out of the clouds.

'The squadron commander lead the squadron to the north side of the enemy force. We were at an altitude of 2600 ft. When about 14-18 miles from the enemy carriers, two Jap fighters commenced attacking us. The squadron remained in combat formation throughout our approach.

'After the first attack, the squadron commander started manoeuvring considerably, loosing and gaining altitude slightly and increasing speed. When approximately 100 miles out, two more Jap fighters joined in the fight. At this time I was very engrossed in watching the squadron leader due to our manoeuvring, and was unable to observe the ships and their movements very well. We proceeded to lose altitude and increased our speed until we were about 150 ft above the water. Several more Jap fighters joined the engagement. Six to eight Jap fighters continually made attacks during our approach. We were forced to get low before we desired to start our initial approach, therefore being at a handicap due to the lack of speed. When approximately one mile from the carrier our leader apparently expected to attack, his plane was hit and it crashed into the sea in flames. At the same time he was hit I had to manoeuvre very violently to avoid tracer bullets from a Jap plane.

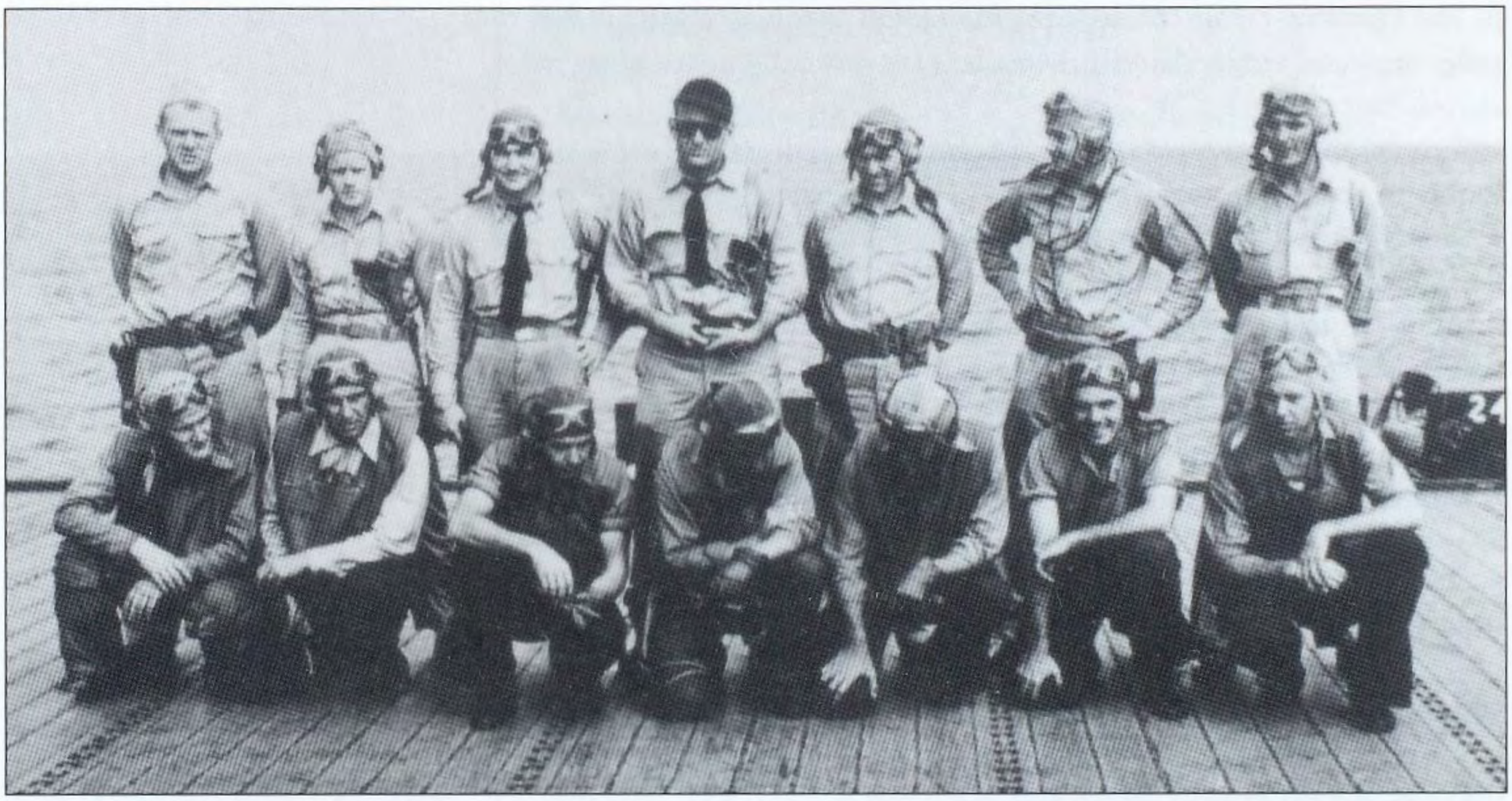
'We made our final turn of our approach and I saw another plane of our formation crash in flames. In the final stages of our attack, I saw only five planes drop their torpedoes. We completed our attack a few minutes after 1200, including my own. Throughout our approach over the screen we were under heavy AA fire, which appeared to be very ineffective, most of it bursting approximately 800 to 1000 ft beyond the formation.

'In the early stages of our approach, my plane was hit by gunfire from a Jap fighter causing the CO_2 fire bottle just forward of my knees to explode. In making our torpedo drops we were under constant gun fire from the carrier, which appeared to be ineffective. We dropped our torpedoes between six and eight hundred yards from the target.

'At this time my radioman called me over the interphone and said he was hit and would be of no further use to ward off fighter attacks.

'Immediately after dropping my torpedo, I turned to my right to clear the ship by several hundred yards. The other four planes crossed directly ahead of the bow of the carrier, one of them crashing into the sea – fighters were still making continuous attacks on us. Due to continuous fighter attacks I was unable to observe the torpedo tracks, or if we scored any hits.

The most experienced aviator and best leader in *Hornet's* Air Group, 41-year-old Lt Cdr John Waldron used his skill to lead VT-8 straight to the enemy carrier force. The rest of *Hornet's* strike force missed their target. Flying TBD-1 T-16 (BuNo 1506), Waldron was about the fourth member of Torpedo Eight to be shot down by the Zero CAP (*via Michael O'Leary*)



The Second Division crews of VT-8 come together for a squadron photo on the deck of *Hornet* in mid-May 1942. Only Ens George Gay survived the annihilation of the unit on 4 June. They are (front row), from left to right, ARM2c H Martin, ARM3c W F Sawhill, ARM1c A Maffei, ARM2c B P Phelps, ARM2c R J Fisher, ARM3c G A Field and ARM3c R K Huntington – absent, AOM3c F B Carniero. Back row, Ens W Teats, Ens U M Moore, Lt J C Owens jnr, Ens W W Abercrombie, Lt(jg) G M Campbell, Ens H J Ellison and Ens G H Gay (*via Mark Horan*)

'In making my retreat I was attacked by two fighters immediately after I started my turn to the right. They each made two or three passes at me, then two other fighters came in from ahead, one from the bow and one dead ahead. At that time I was 10 to 12 miles from the carrier we attacked. Two more Jap fighters started making passes at us, one from the port and the other from ahead. They continued to make passes at us until we were about 20 miles from our objective. The fighters then retired toward the Jap fleet.

'I noticed another TBD approaching me from the stern. It was T-3. He signalled his radio was out of commission. The fuselage of his plane was covered with oil and his engine apparently pumping oil badly. He joined on me and we proceeded on our return. At this time I became aware of the fact that my port fuel tank had been pierced – there was also a leaking fuel line inside the cockpit. On checking, I had only ten gallons of fuel left in the port tank. I immediately switched to my port tank, using fuel from the port tank until it was empty. I had lost about 55 gallons of fuel. The engine performed satisfactorily throughout the operation. During approach and retirement, I was using full throttle, turning up 2050 RPM at 35 to 37 inches of mercury. Realising I had about 30 to 35 gallons of fuel, I leaned my mixture to the minimum and throttled back to 23 inches of mercury, speed about 85 knots indicated. My aileron tab control was inoperative.

'After careful observation of the sky for enemy planes, I started climbing for the clouds. I requested my radioman to change coils in the radio receiver so we could pick up the YE. He stated he was in a very bad condition and doubted he could do that. I replied "Very well". Approximately ten minutes later he notified me he had changed the coil, and for me to change the dial setting to 79. This I did, but did not hear the YE. T-3 continued with me for a time and then took a course off to starboard. After about 20 minutes I lost sight of him and did not see him again.

'After climbing to 5500 ft the YE came in. I was off course by about ten degrees to port. Levelling off at this altitude, I reset the mixture and throt-

tle and kept a very close check on the fuel supply. At about 1340 my fuel gauge registered empty. Shortly thereafter I felt very enlightened by sighting our fleet.

'Continuing at the same altitude, I sighted 18 Jap dive-bombers to the starboard about four or five miles away. I immediately nosed over and headed for the clouds. Proceeding under the clouds for several minutes, I saw three Jap dive-bomber planes crash into the sea.

'At this time the engine stopped. I immediately radioed the *Yorktown* that I was making a water landing, giving my bearing of 270 and distance ten miles. Putting the flaps down, I made a full stall landing. The plane immediately started settling nose down. I then tripped the floatation gear. It worked very satisfactorily. My radioman called for assistance, and I helped him out of the cockpit and noticed he was very badly injured. I proceeded to inflate the rubber life raft, at which time I noted that the hood covering the second cockpit had numerous bullet holes in it. I got the raft out and found it had a hole in it. Upon inflating the rubber raft, I found it was sufficiently buoyant to hold my radioman. I assisted him into the raft, gave him a drink of water and made an attempt to patch the hole, which I found to be a futile task due to the impossibility of keeping the area to be patched dry.

'I noted by my wrist watch that we landed at 1403, as my watch stopped at that time. An SBD came by at that time and dropped a float light and proceeded toward the *Yorktown*. Sometime later two more SBDs came by and dropped float lights. One of them I recognised as B-1. My radioman was suffering considerable, complaining about his back. I found he had been hit in both legs between the knee and ankle, and also hit in the back. He died shortly thereafter while in the raft.

'While in the water a Jap dive-bomber passed astern and turned around starting toward us. I assumed he was going to strafe us! I immediately submerged beside my plane. An F4F came out of the clouds and attacked the Jap bomber. It retired into the clouds. We were picked up by the USS *Hammann* at 1525, after being in the water approximately one hour and twenty-five minutes. The ship's crew sunk the plane by piercing the floatation bags with small calibre gun fire. At that time I noticed blood running down my forehead. Later, I assumed I apparently cut my head during my landing.

'Brazier was buried at sea the following morning.

'The Zero fighters all carried belly fuel tanks. Several jettisoned them prior to starting their attacks. While only two fighters were attacking us they made most approaches from the side overhead. After more fighters joined the attack, they were making attacks from ahead, astern and both sides simultaneously. They appeared to favour runs from dead ahead.

'I was able to avoid considerable fighter gun fire by watching the tracer bullets, making my decision to turn toward or away from the attacking plane. My retreat was made at an altitude of about 50 to 75 ft.

'After landing in the water, I noticed that there was a great number of holes in the plane from small calibre and cannon fire.'

THE LAST DAY

Enterprise and *Yorktown* SBDs destroyed *Hiryu* the afternoon of 4 June, ending the carrier phase of the battle. However, the pursuit phase

TORPEDO SQUADRON SIX – 6 JUNE 1942

Sqn No	BuNo	Pilot	Radioman-Gunner
4	0350	Lt(jg) R E Laub	ARM1c W C Humphrey Jr
3	0279	Ens J S Morris	ARM2c D R Butler
5	0368	Mach H A Mueller	ARM3c R W Graetz

followed immediately. On the morning of the 6th Lt Robert Laub, the senior survivor of VT-6, was assigned to lead the three remaining TBDs in a strike against two Japanese cruisers damaged on 5 June. It was not a prospect the 'torpecker' aviators relished. They consulted with Rear Adm Raymond Spruance, TF-16 commander, and reached a compromise – no attack 'if there is one single gun firing out there'.

Laub led Ens Jamie Morris and Machinist Harry Muller, who had missed the 4 June mission. They found that the crippled *Mogami* and *Mikuma* lacked fighter support but were still capable of AA fire. The *Enterprise* crews probed the enemy defences but followed orders and jettisoned their Mk 13s when flak blossomed around the enemy ships. SBDs finished *Mikuma*, although *Mogami* limped away. When the VT-6 trio recovered aboard the 'Big E', the TBD's war was over.

DEVASTATOR DENOUEMENT

Yorktown succumbed to a Japanese submarine early on the morning of the 7th, still with three TBDs aboard. It brought total Devastator losses at Midway to a staggering 42 of 45, reducing the navy's inventory to a mere three-dozen. Personnel losses amounted to 83 per cent of those who flew the 4 June mission – 68 of 82 pilots and aircrewmen from 32 of the 48 United States.

Clearly, the Avenger had arrived just in time, although its combat debut matched the TBD's swansong. Torpedo Eight's Midway detachment had lost five of its six Grummans, with Ens A K Earnest and his gunner, ARM3c C H Ferrier, being the only survivors of the land-based TBF contingent.

In analysing the destruction of Torpedo Six, Lt(jg) Laub cited five major factors in the annihilation of his squadron: manoeuvring of the Japanese ships to prolong the TBDs' approach as much as two or three times normal; the Zero CAP, which had ample time to intercept; poor co-ordination with the dive-bombers; lack of fighter protection; and Japanese anti-aircraft fire. He listed AA as last, because although *Kido Butai* had 17 escorts, they were spread across a 20 nautical mile box to permit the four carriers individual manoeuvring room, contrary to US practise which emphasised mutual support. Consequently, the potential intensity of Japanese AA fire was diminished. Even then, it was bad enough.

Laub's summary of the VT-6 attack was heartfelt and poignant. It could apply to all the TBD crews engaged at Midway;

'All pilots and men of this squadron who participated in the attack should be very highly commended for their courageous action. Those pilots and men set an example of moral courage and devotion to duty that will be difficult to equal anywhere in the service. The attack was pressed home in the face of intense light and heavy calibre AA fire and fighter

aircraft opposition of the Japanese 'Zero' type. The Japanese fighter planes were not only superior in manoeuvrability and firepower but outnumbered our 14 TBD-1 aircraft in the ratio of two-to-one. It is not the desire of the writer to call attention to the action of any one individual, but it is paid with their lives for a magnificent victory.'

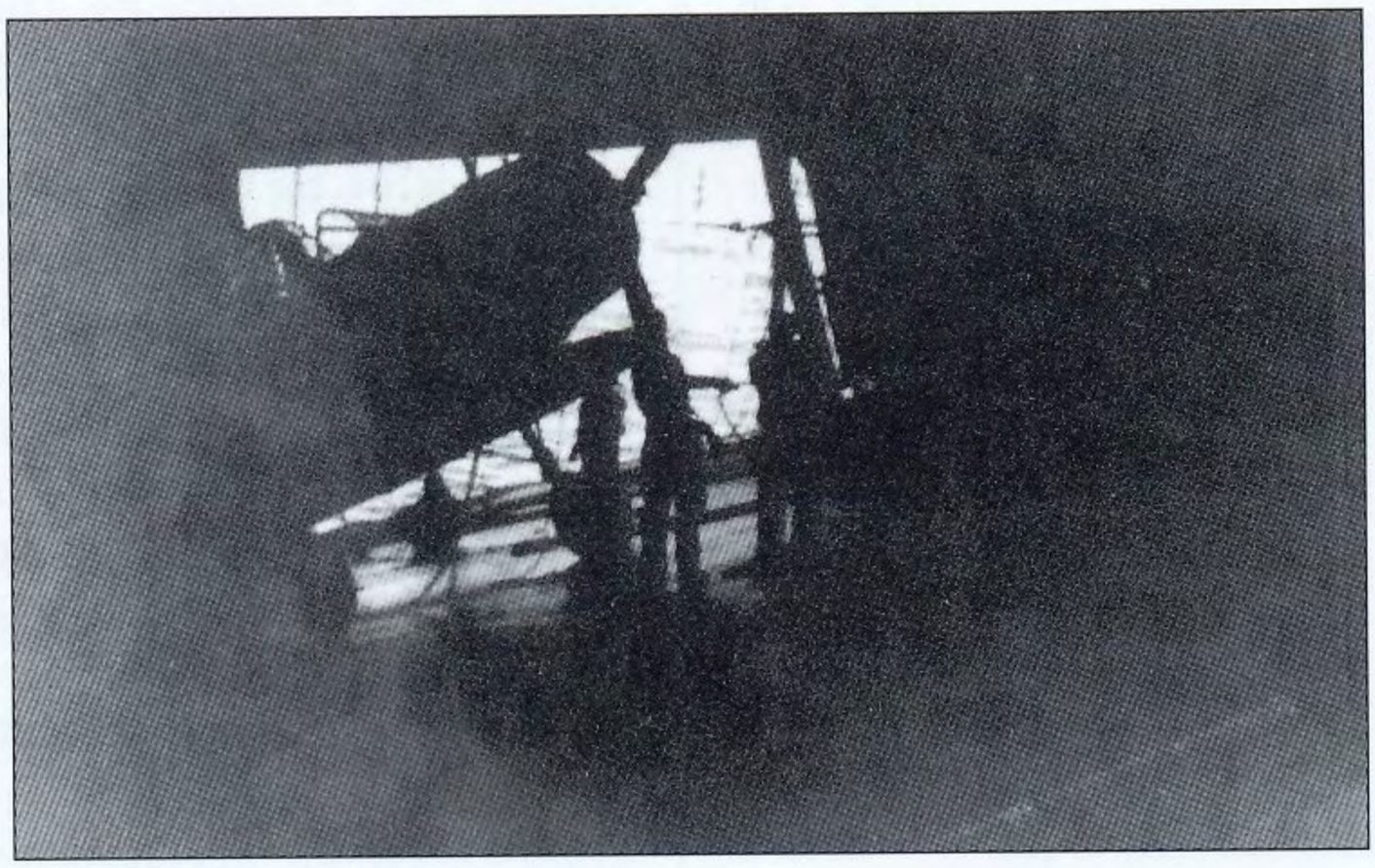
A rare legacy accrued from the tragedy that befell the Midway TBD squadrons. The sons of two commanding officers received appointments to the Naval Academy, as Ensigns Eugene E Lindsey Jr and Lance B Massey were commissioned in the Annapolis Class of 1958. The younger Massey became a naval aviator and flew anti-submarine aircraft for much of his career.

Two months after the Battle of Midway, in August 1942, the reorganised VT-3 and VT-8, along with VT-7, flew Avengers in support of the Guadalcanal invasion. A handful of TBDs, meanwhile, lasted into 1944 as test beds or training platforms.

The last Devastator stricken from Navy records was BuNo 0325, originally delivered to Torpedo Six in March 1938. The paper trail is lost after 1939 when the aircraft went to Commander Fleet Air West Coast, but it was retained on the rolls until 30 November 1944. However, as is often the case, the 'strike' date is probably administrative only. The actual airframe may well have been disposed of months before. With its demise the TBD became extinct, as did the F2A and SB2U. But the Devastator – that maligned warrior – surely will be remembered as long as aircraft carriers remain afloat.

VT-8's Division One also had their photograph taken during the unit's mid-May photo-call. CO, Lt Cdr Waldron, can be seen standing second from left, his right hand resting on his gun holster. No crewmen from this division survived the 4 June mission (*via Mark Horan*)

Torpedoed and bombed by Japanese aircraft on 4 June, Yorktown was finally sunk by the Japanese subamrine I-168 two days later. This rare shot was taken on the morning of the 6th just prior to the vessel's demise. It shows VT-3's spare TBD about to be jettisoned overboard from the hangar deck. Note the carrier's list to port (*via Mark Horan*)



ASSESSMENT

The Devastator story is limited by the aircraft's small production run, but within the careers of those 130 airframes that were built is a surprising variety of trivia. For instance, barely half of all TBDs were assigned to Pacific Fleet squadrons between the climactic events at Pearl Harbor and Midway. Of those 76, more than three-quarters (59) were lost to combat or operational causes.

For such a well-known aircraft, the TBD logged surprisingly little combat. In fact, the 178 sorties that resulted in enemy contact equate to barely one mission for every aircraft produced. On average, each wartime Devastator assigned to a Pacific Fleet squadron flew 2.2 combat sorties between 1 February and 6 June 1942. The highest individual mission count probably belonged to VT-5's BuNo 0354, which logged perhaps six combat sorties, including a Japanese submarine contact.

Overall, the five PacFleet TBD units launched 132 aircraft with torpedoes, of which about 95 (72 per cent) dropped their 'fish'. However, only ten hits were recorded – 7.5 per cent of the aircraft launched and 10.5 per cent of Mk 13s dropped. By far the most successful mission was the combined *Lexington-Yorktown* strike of 7 May, when full co-ordination with SBDs saw 36.8 per cent hits from 86 per cent of the aircraft launched.

At Midway, VT-3 and -6 each got about 42 per cent of their TBDs to the drop point despite severe opposition from fighters and anti-aircraft gunfire. Torpedo Eight, poorly positioned from the start, managed just one known drop from 15 TBDs. The overall performance figures were further skewed when VT-6's three pilots followed orders and jettisoned torpedoes rather than attack the cruisers *Mogami* and *Mikuma* on 6 June.

Although primarily a torpedo aircraft, the TBD flew nearly one-quarter of its sorties with bombs. A further five sorties resulting in contact with the enemy were made with depth charges. The 112 torpedo sorties resulted in four Mk 13s jettisoned or failed to release. Thus, 108 effective sorties resulted in about 95 torpedoes dropped, with ten hits on four ships, of which two were sunk.

Of the five combat TBD units, by far the most active was VT-5 with 68 sorties, followed by VT-6 (44) and VT-2 (39). TorpRons Eight and Three, which flew the type only at Midway, logged 15 and 12 sorties respectively.

The 130 TBDs certainly got around in their five-year fleet career. Twelve navy squadrons and one

Most post-Midway TBDs finished their careers in operational training units, such as these Devastators at NAS Corpus Christi, Texas, in late 1942. Of interest is the mixture of large stars on the wings and small stars on the fuselages. Five war-weary TBDs are known to have served at 'Corpus', all with 600-range side numbers (*Fred Dickey Jr via the Naval Aviation Museum*)

marine unit flew Devastators, six of which had fewer than half a dozen aircraft at any one time. However, VT-2, -3, -5 and -6 each received between 55 and 70 individual aircraft during their TBD eras.

Despite the appalling attrition of Midway, Devastators remained in fleet squadrons for at least three more months. Egregious allocation records show that *Wasp* deployed to the Guadalcanal operation with eight TBFs and two TBDs assigned to Torpedo Seven when in fact the ship embarked only Avengers. However, *Ranger* in the Atlantic Fleet retained about eight VT-4 Douglases ashore at Norfolk, Virginia, while Grummans were taken to sea. By October 1942 the Devastator had been fully replaced in frontline torpedo squadrons.

Two TBD sqyadrons survived wartime attrition and postwar force reductions, serving into the jet age. Appropriately, both continued flying Douglas aircraft. *Saratoga's* Torpedo Three became VA-4A in 1946 and was disestablished as VA-35, an AD-2 Skyraider squadron, on 7 November 1949. Likewise, *Ranger's* VT-4 became VA-2A and, as the first VA-15, lasted until 1 June 1969 when the A-4C Skyhawk unit stood down.

Despite its 'suicide coffin' reputation, the Douglas TBD was undeniably a significant aircraft. It brought US naval aviation into the modern era, becoming the first monoplane embarked in American aircraft carriers. Some of its design features showed the way to the future, including hydraulically-operated landing gear, flaps and folding wings.

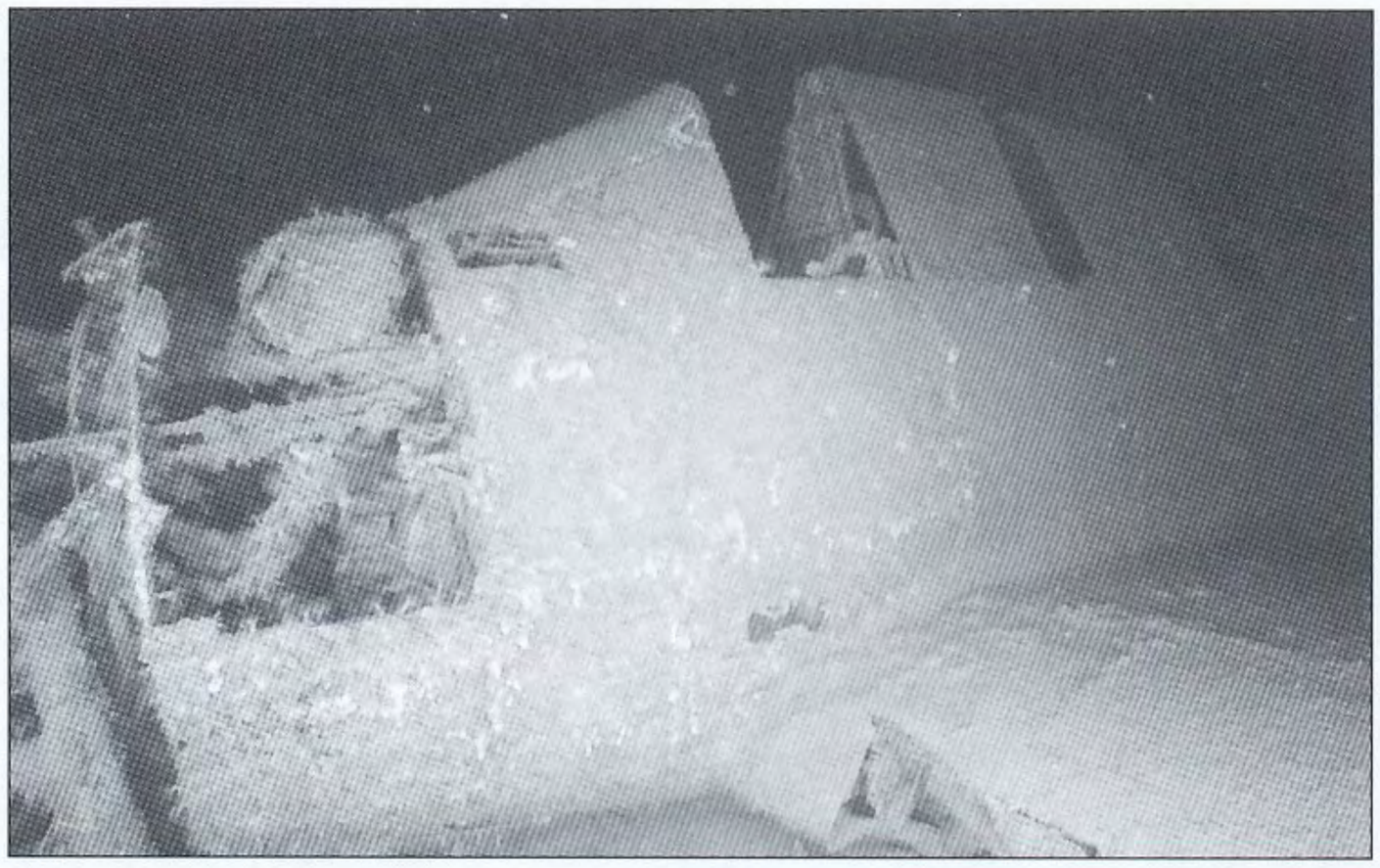
In combat, the Devastator proved itself a better weapon than conventional wisdom allows. The type suffered no in-flight losses to enemy action until the morning of 4 June 1942, six months after the Pacific War erupted. The US naval establishment committed its TorpRons to war with a marginal weapon – the Mk 13 torpedo – but the failings of that design were in no way the fault of the TBD or Douglas Aircraft. In large part the successful employment of VT-2, -3, -5, and -6 was due to the unusual depth of knowledge and experience in those squadrons. Many pilots and aircrewmen had served for as long as four years with their units before seeing combat, and that institutional advantage made itself known in the far reaches of the vast Pacific Ocean during the first half of 1942.

THE SAGA OF 0353

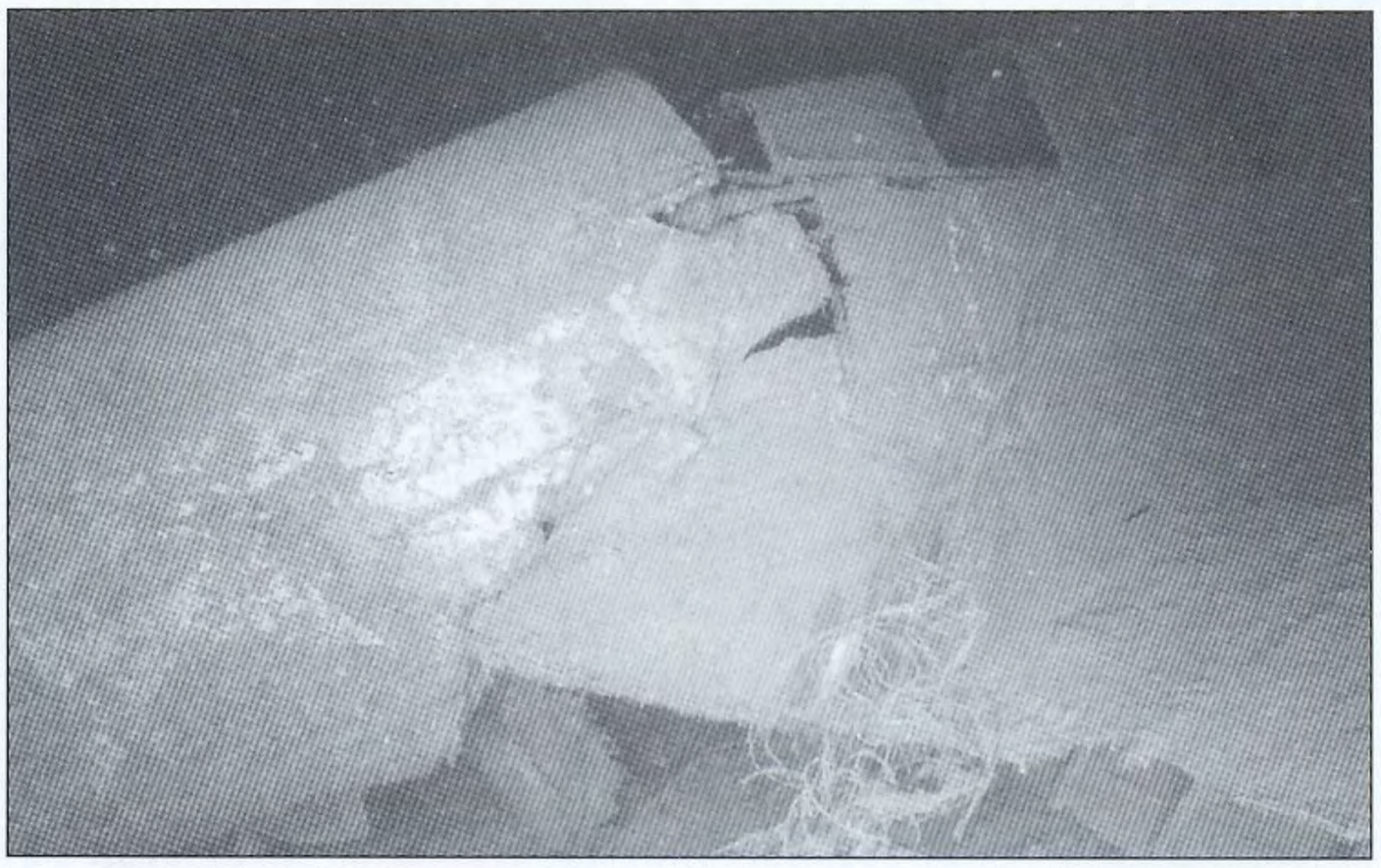
The 86th production TBD was BuNo 0353, delivered to NAS Pensacola, Florida, in April 1938. It was one of nine aircraft sent directly from the Douglas factory to the navy's premier training base for student naval aviators to become familiar with current fleet aircraft.

In July 1941 BuNo 0353 was transferred to Torpedo Squadron Five, assigned to USS *Yorktown* (CV-5) at Norfolk, Virginia. When the carrier was hastily transferred to the Pacific Fleet after the Pearl Harbor attack, 0353 remained aboard. The Devastator flew in most of VT-5's combat operations – the Gilberts, Lae-Salamaua, two Tulagi missions, plus both carrier strikes in the Battle of the Coral Sea. There (as 5-T-5), it was flown by Lt(jg) F R Sanborn during attacks against *Shoho* on 7 May and *Shokaku* on the 8th. Few TBDs flew as many combat missions as 0353.

Upon returning to Hawaii, *Yorktown* offloaded her air group while hasty repairs were made to her battle damage. *Saratoga's* VT-3 replaced Torpedo Five for the short, violent Midway operation, and 0353 was transferred to NAS Pearl Harbor in late June. In September the combat



With only marine life for company, Coral Sea veteran BuNo 0353 has sat at the bottom of the Atlantic Ocean off the Florida coast since 2 September 1943. As this underwater photograph clearly reveals, the TBD is still predominantly intact (*Robert Mester*)



The fuselage of the TBD appears to have broken just aft of the observer-gunner's position during the ditching. Remnants of the fuselage star are just visible through the silt and barnacle encrustations (*Robert Mester*)

veteran was sent to NAS Miami, Florida, for operational training use, and remained there for a year.

On 2 September 1943 0353 suffered engine failure during an aerial torpedo exercise. Ens Bruce T Mallory ditched the TBD off Florida's Atlantic coast, and it was officially stricken from the navy roster on 8 September. By year end – certainly by 1944 – no TBDs remained.

Forty-seven years later a marine salvager found the barnacle-encrusted TBD lying intact in 500 ft of water. The National Museum of Naval Aviation (NMNA) was contacted in the belief that an extinct carrier aircraft would be recovered. Although its identity was unknown, its historic value was obvious. However, the museum and the navy declined the salver's offer of retrieval, stating that the cost was excessive.

The following year, 1991, the salvager sold the TBD's location to Douglas Champlin of Mesa, Arizona. With an international reputation as a restorer of 'warbirds', Champlin had operated a superb fighter aircraft museum since 1981. He intended to raise the TBD and trade it to the Pensacola museum for two F4Fs, which the NMNA had in abundance.

A remotely-controlled submersible scouted the TBD and noted the BuNo on the vertical stabiliser. A check with the Tailhook Association in San Diego, California, showed that the record card of 0353 proved it of exceptional value – a Coral Sea combat veteran of Torpedo Five!

Despite the unquestioned historic value of the Devastator, the navy consistently refused to co-operate with Champlin in raising the aircraft. Finally, after more than eight years of spurious 'negotiations' on the part of the navy, a federal court declared in favour of Champlin and granted him the right to raise the TBD as well as retrieval of legal expenses.

The government immediately appealed, preferring to leave 0353 rotting on the bottom of the Atlantic rather than fulfilling the museum's charter of preserving naval aviation's heritage. As of this writing, the case continues.

Meanwhile, another sunken TBD had been located in 1997 by fishermen near Jaluit Atoll. The aircraft was one of two from VT-5 that ditched following a *Yorktown* strike on 1 February 1942. The pilots became disoriented in poor weather and, running low on fuel, ditched north of the Japanese-held atoll. Both crews were captured and spent the rest of the war in captivity. Although interest in recovering the TBD was expressed in the US, local officials declined co-operation.

SQUADRONS AND MARKINGS

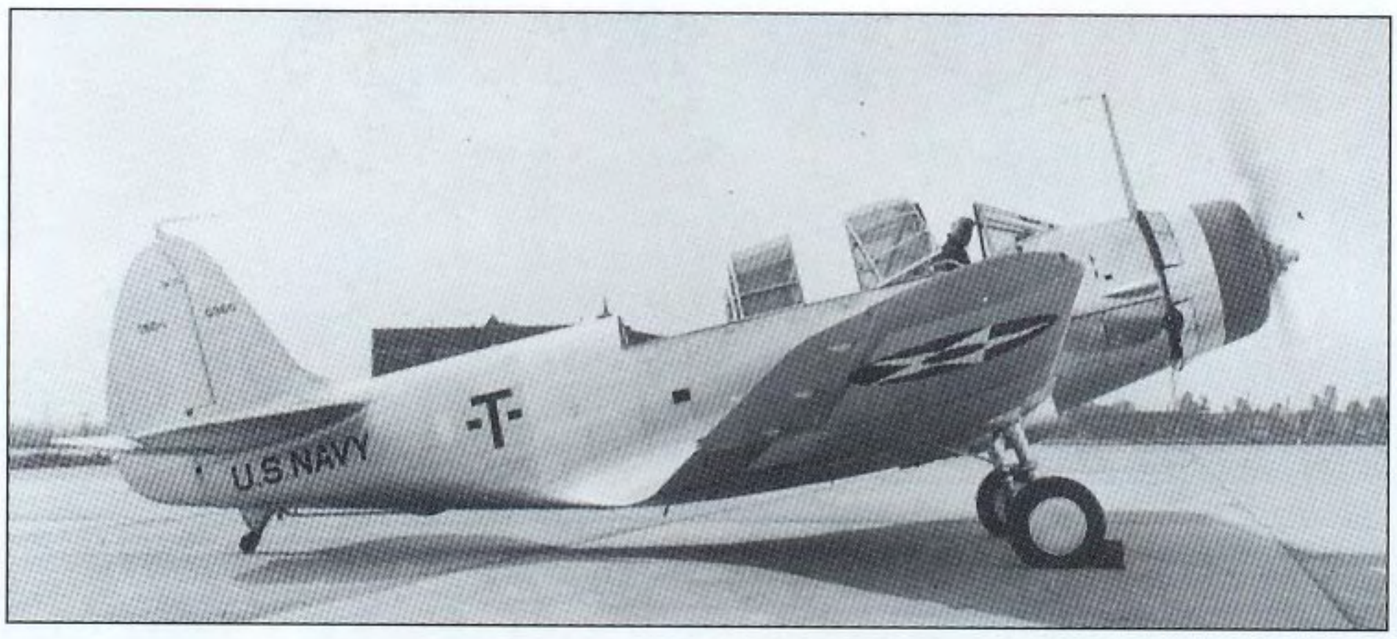
From 1937 to 1942, 13 squadrons flew TBDs before the surviving Devastators were sent to operational training units. In chronological order they were;

Torpedo 3	71 TBDs	October 1937 to June 1942
Torpedo 2	58 TBDs	December 1937 to May 1942
Torpedo 5	57 TBDs	February 1938 to May 1942
Torpedo 6	62 TBDs	February 1938 to June 1942
Utility 3	1 TBD	January to May 1940
Scouting 42	3 TBDs	January to October 1941
Scouting 71	8 TBDs	December 1940 to October 1941
Marine Scouting 2	1 TBD	March to June 1941
Torpedo 8	23 TBDs	September 1941 to June 1942
Torpedo 4	9 TBDs	December 1941 to September 1942
Bombing 4	3 TBDs	December 1941 to January 1942
Torpedo 7	5 TBDs	January to July 1942
Scouting 72	2 TBDs	June 1941

Assignment of torpedo aeroplanes to Atlantic Fleet scouting squadrons during 1941 reflected the shortage of dedicated scout aircraft. America's avowed policy of neutrality during the early phase of the European war clashed with reality. In truth, President Franklin Roosevelt authorised the US Navy to escort British convoys, and to engage German U-Boats without advice and consent of the Senate, as required by law. But the so-called 'Neutrality Patrol' required additional scouting squadrons to search for combatant vessels from the warring powers. Consequently, VS-71 and -72 in *Wasp* and VS-42 in *Ranger* flew TBDs for much of that period. Three TBDs (BuNos 0295, 1508 and 1509) were assigned to *Ranger's* bombing squadron, where they were apparently used for administrative duties for about three weeks before going to VS-42 and -71 in January 1941.

The Marine Corps operated just one TBD, BuNo 1518 (the next to last one built), loaned from VT-3 at NAS San Diego between 26 March and 5 June 1941. The aircraft returned to *Saratoga* and was ultimately lost with Torpedo Eight

USS *Yorktown* (CV-5) received its first TBDs in February 1938, and was soon operating at full strength. This aircraft, 5-T-7, displays the full spectrum of pre-war markings from *Yorktown's* red tail and blue section leader markings to VT-5's emblem (of a mounted valkyrie) and coveted 'Battle E'. The latter signified that the crew has demonstrated efficiency in all phases of operations, including bombing, torpedo attack and gunnery. This photograph was taken in November 1939 (*Harry S Gann via the Naval Aviation Museum*)



BuNo 0360 was delivered to Torpedo Five in April 1938, minus full markings which would eventually include *Yorktown's* red tail. However, the aircraft arrived with a section leader's full-circle cowling, which indicates that it was intended to serve in a specific position within the squadron. In 1940 BuNo 0360 flew with VT-6 in *Enterprise*, returned to *Yorktown* in 1941 and then went to *Ranger's* VT-4 in 1941-42. The fleet veteran was finally stricken from the navy roster in October 1943 (*Doug Olson via the Naval Aviation Museum*)

at Midway a year later. Originally a *Lexington* VT-2 TBD, 1518 also flew with VT-6 in *Enterprise* for a total of five squadrons from 1939 to 1942.

One other aircraft also served in five squadrons, for BuNo 0321 was assigned to VT-2, -3, -5, -6 and -8 between 1938 and 1942. A dozen other Devastators each belonged to four squadrons during their fleet careers.

MARKINGS

The US Navy's pre-war unit markings system was perhaps the most logical and certainly among the most colourful in military history. Once the system was understood, it permitted instant recognition of the squadron and, therefore, the carrier to which an aircraft belonged.
Each carrier was assigned a permanent tail colour for all embarked aircraft. From 1937 to 1941 they were;

Lexington (CV-2) – lemon yellow
Saratoga (CV-3) – insignia white
Ranger (CV-4) – willow green
Yorktown (CV-5) – insignia red
Enterprise (CV-6) – true blue
Wasp (CV-7) – black
Hornet (CV-8) – not assigned

The upper surfaces of both wings were chrome yellow, with a diagonal stripe in the appropriate colour on each wing.

Within each unit (nominally 18 aircraft) each three-aeroplane section had nose bands of the same colours used for carrier tail identification;

First section (aircraft 1 to 3) – red
Second section (aircraft 4 to 6) – white
Third section (aircraft 7 to 9) – true blue
Fourth section (aircraft 10 to 12) – black
Fifth section (aircraft 13 to 15) – willow green
Sixth section (aircraft 16 to 18) – lemon yellow

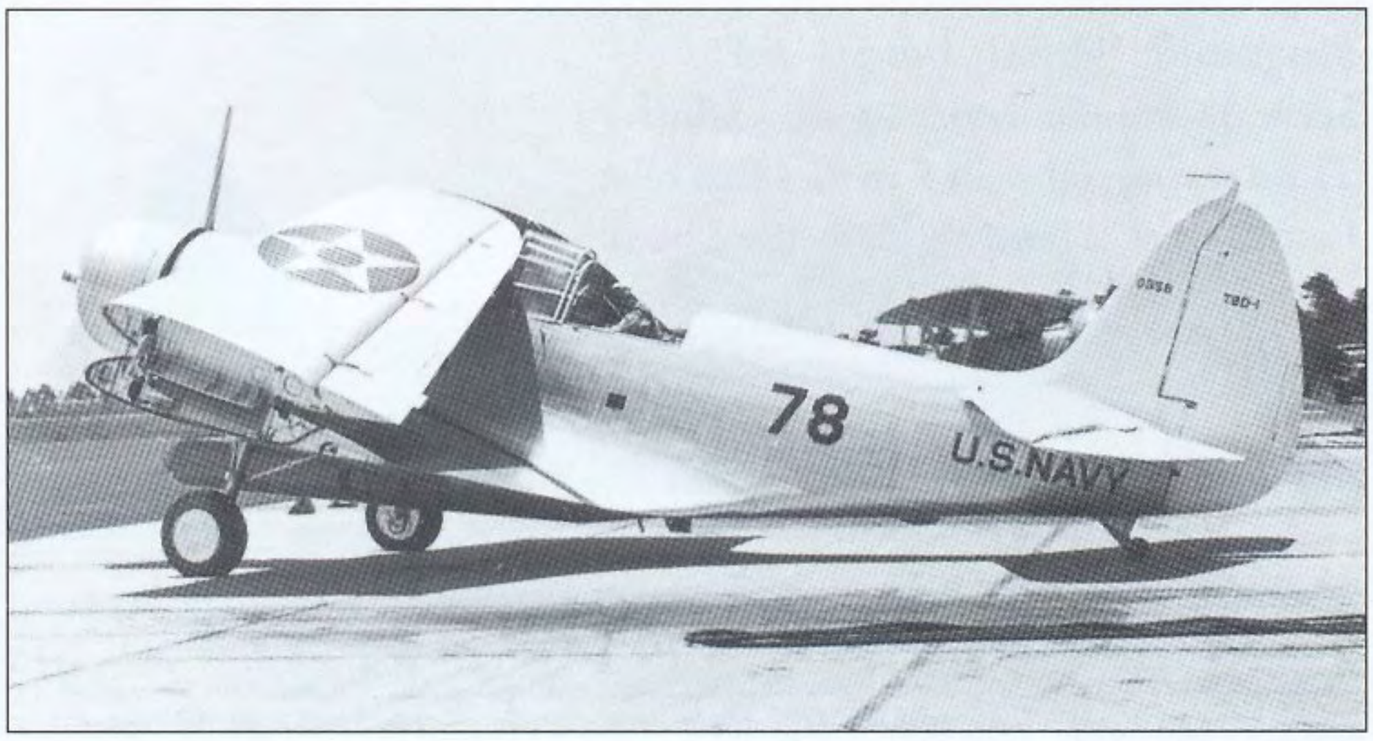
The section leader's aircraft had a full ring in the designated colour around the front of the engine cowling, plus a matching fuselage band. The second aeroplane in each section had the top half of the cowling painted while the third TBD sported the bottom half of the cowling in the same colour. The two wingmens' aircraft had no fuselage bands.

The uniquely-marked TBD-1A is seen out of the water at Newport Torpedo Station in Rhode Island in 1939. The aircraft's full-length black datum line on the fuselage is clearly visible from this angle, as is the rather complex legend '2XD11' (*via Norman Polmar*)

The foregoing markings, including the US national insignia, were applied over polished metal or aluminium doped fabric surfaces. Because of the large individual aircraft identifiers (2-T-1 for instance, designating the commanding officer of Torpedo Two), US Navy carrier aircraft did not carry national emblems on their fuselages during this period.

A pre-war experiment in radical aircraft camouflage resulted in by far the most distinctive paint scheme ever applied to TBDs. In 1940 commercial artist McClelland Barclay proposed a trial period for unconventional camouflage schemes that were tested on all aircraft types of the *Saratoga* Air Group. Nine schemes were applied to TBDs, Northrop BT-1s, Brewster F2A-2s, Vought SB2U-2s and at least one utility aircraft. Two VT-3 Devastators (BuNos 0320 and 0339) received separate patterns of bizarre geometric shapes in various colours, including deep blue and dark grey upper surfaces with bright blue and white beneath. Photographic evidence shows that at least two VT-5 TBDs also received similar camouflage schemes.

The so-called 'dazzle pattern' was reminiscent of ship camouflage paint employed during World War 1, with the aim of confusing an observer as



Among the nine TBDs sent directly to NAS Pensacola, Florida, was BuNo 0358, which remained in the training command until 1941. This aircraft was based at Corry Field with Squadron Five, which gave student naval aviators experience with current fleet aircraft. Subsequently, 0358 served in *Yorktown's* VT-5 and *Ranger's* VT-4, going to the Atlantic Fleet pool in August 1942 and being stricken in January 1943. This pre-war photograph sees the aircraft equipped with a Mk 13 torpedo (*William E Scarborough via the Naval Aviation Museum*)

to the aeroplane's type and size (and therefore distance), as well as direction of flight. Barclay further thought that aircrew positions would be obscured, possibly ceding a tactical advantage to gunners.

Observers concluded that the Barclay schemes were only marginally useful, and then only at ranges inside 300 yards. Experienced airmen or sailors were less likely to be deceived than new personnel, and the navy concluded that the concept was 'not worthwhile for naval aircraft'.

With approaching hostilities, in late 1940 an overall glossy grey was specified for carrier aircraft, with the yellow wings were retained until year end. Then, in October 1941, colours and markings for fleet aircraft were drastically changed. Non-specular blue-grey upper surfaces and medium grey lower surfaces replaced the colourful peacetime schemes as camouflage became more important than identification. Fuselage stars with the red centre now appeared, as did alternating red and white rudder stripes. Squadron recognition still was retained, but often in low-contrast black (6-T-12 for example) rather than more easily distinguished white.

With yellow nose and fuselage bands, BuNo 0318 was the sixth section leader of Torpedo Six in 1940. Originally delivered as 5-T-12 in March 1938, the aircraft joined *Enterprise* in May 1940 and went to *Saratoga* late that year. Following duty at Corpus Christi, Texas, and Melbourne, Florida, it was stricken along with most other Training Command TBDs in October 1943. Note that T-16 is flying with a full three-man crew, standard practise before the war, and the usual procedure for VT-6 during most of 1942 (*via Peter Mersky*)

Transitional markings are evident on this VT-6 Devastator airborne over Hawaii in late 1941. The non-specular colour scheme is blue-grey upper surfaces and medium grey lower, with a small fuselage star containing the red centre. Squadron identification is rendered in black, although the landing signal officer's reference stripe is painted in white for optimum visibility from the LSO platform (*Dr Steve Ewing via the Naval Aviation Museum*)

Before the war nearly every fleet squadron displayed a unit crest on its aircraft, generally just forward of the cockpit. Devastator emblems were typically varied – Torpedo Two's cannonball riding a torpedo, VT-3's winged red dragon, Torpedo Five's mounted valkyrie and TorpRon Six's great white albatross. These distinctive emblems were mostly deleted when camouflage colour schemes arrived in 1941.

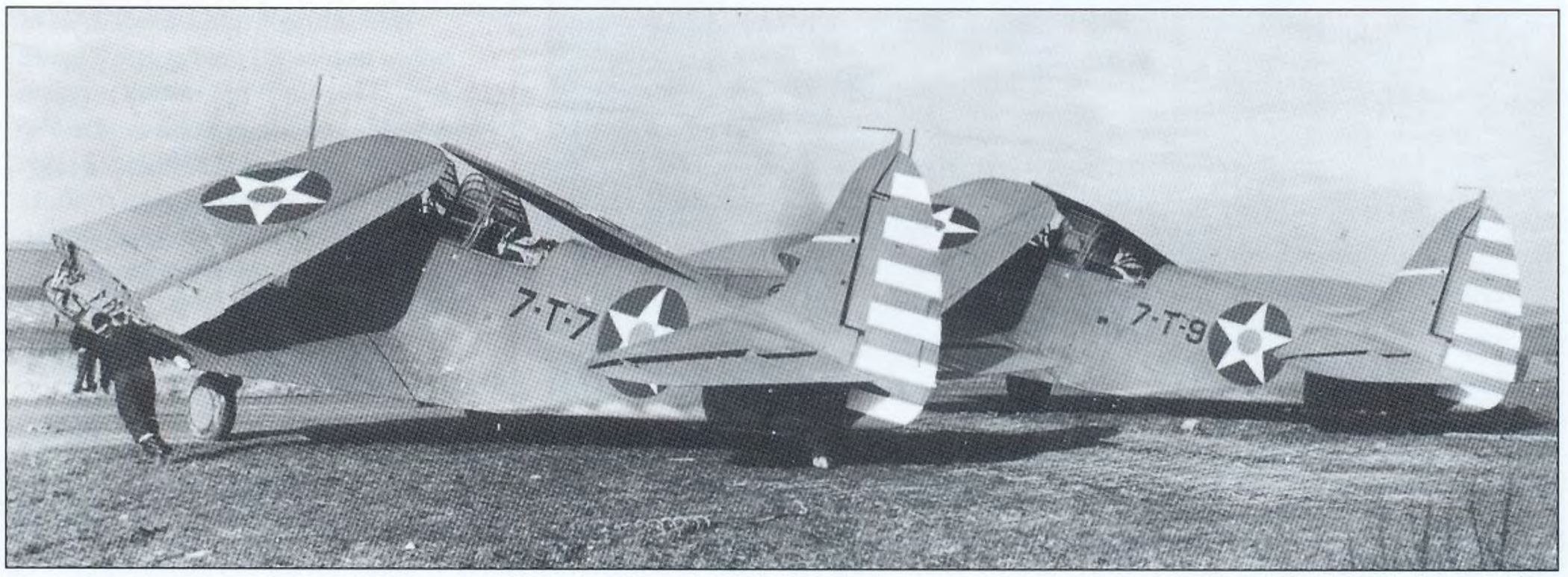
After the Pearl Harbor attack, hostilities brought about a change in naval aircraft markings. On 29 April 1942 the pre-war practise of full identification on combat aircraft (i.e. 3-T-1) was withdrawn by Commander Carriers Pacific Fleet. The change was an obvious wartime security measure to deny the enemy easy knowledge of the squadrons, and therefore the carriers operating in a specific area. Subsequently, the second and third digits of the legend were employed (T-1), but by June many squadrons and some air groups displayed only the individual aircraft number, usually in black but occasionally in white. However, in the continental United States, and to some degree in the Atlantic, full legends were carried almost until the end of the war.

Combat experience and simple prudence dictated a final change to aircraft markings in 1942. Since the prime enemy, Japan, painted red 'suns' on its aircraft, the American armed forces abandoned the use of the same colour. Therefore, in May 1942 the rudder stripes were abolished and the red centre of the American star was overpainted with white.

Personal markings on wartime TBDs were extremely rare. However, occasionally pet names were assigned to aircraft, and VT-6 marked a rising sun flag below the cockpit of a pilot credited with a torpedo hit prior to Midway. Photographic evidence indicates no such markings in June 1942.

Two of *Yorktown's* squadrons are seen on the ramp at East Field, Norfolk, Virginia, in September 1941. The TBDs of VT-5 have received sea-grey upper surfaces while the SBDs of VB-5 retain the previous overall light grey finish. This photograph represents the US Navy's heightened concern with global tensions, as the peacetime colours rendered aircraft more visible over water, while the darker sea-grey was demonstrably more effective camouflage (*via Norman Polmar*)

These two USS *Wasp* (CV-7) TBDs belonged to Torpedo Squadron Seven in the first half of 1942. Unusual markings are evident in the rudder stripes, which end in a line running vertically from the 'notch' to the tip rather than spanning the full chord of the control surface, as was typical in other TBD squadrons. *Wasp's* Devastators were replaced by Grumman TBF Avengers in July 1942 (*W L Swisher via the Naval Aviation Museum*)



APPENDICES

TBD TORPEDO ATTACKS

Date	Unit	Target	Location	Launched	Drops	Hits
1 February	VT-6	AKs	Kwajalein	9 TBDs	9	1
10 March	VT-2	*Yokohama Maru*	Salamaua	13 TBDs	13	1
4 May	VT-5	*Kikuzuki*	Tulagi	12 TBDs	11	1
4 May	VT-5	Mine layer	Tulagi	11 TBDs	11	0
7 May	VT-2	*Shoho*	Coral Sea	12 TBDs	9	5
7 May	VT-5	*Shoho*	Coral Sea	10 TBDs	10	2
8 May	VT-2	*Shokaku*	Coral Sea	12 TBDs	11	0
8 May	VT-5	*Shokaku*	Coral Sea	9 TBDs	9	0
4 June	VT-3	*Hiryu*	Midway	12 TBDs	5?	0
4 June	VT-6	*Kaga*	Midway	14 TBDs	6	0
4 June	VT-8	*Soryu*	Midway	15 TBDs	1	0
6 June	VT-6	*Mogami/Mikuma*	Midway	3 TBDs	0	0
Total				**132**	**95?**	**10**

TBD BOMBING ATTACKS

Date	Unit	Target	Location	Launched
1 February	VT-6	AKs	Kwajalein	9 bombers
1 February	VT-5	Various	Jaluit	11 bombers
24 February	VT-6	AKs	Wake Island	9 bombers
10 March	VT-5	Aks	Lae-Salamaua	12 bombers

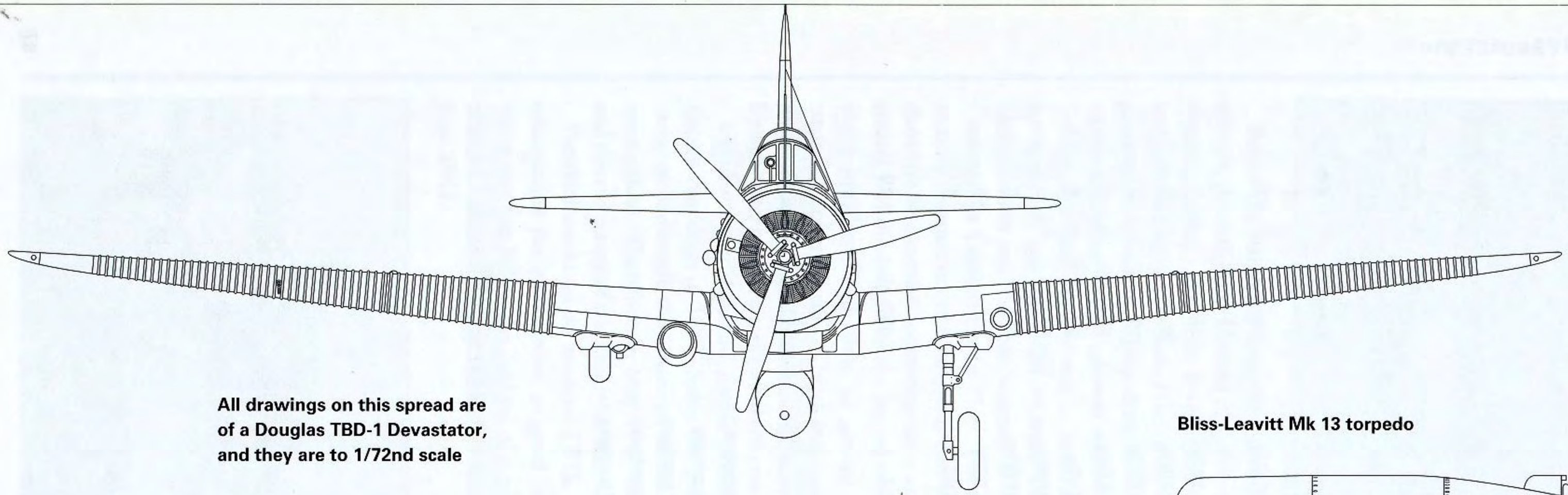
TBD ANTI-SUBMARINE ATTACKS

VT-2 – 2 on 10 December 1941
VT-5 – 3 on 2 May 1942

TBD COMBAT SORTIES

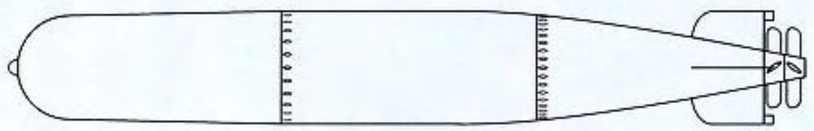
VT-5 – 68 in 7 missions
VT-6 – 44 in 5 missions
VT-2 – 39 in 4 missions
VT-8 – 15 in 1 mission
VT-3 – 12 in 1 mission

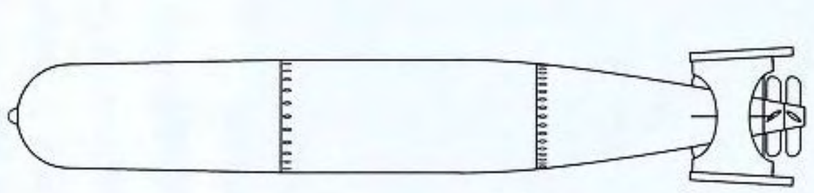
Total of 178 in 18 missions, of which 132 were torpedo, 41 bomber and 5 ASW



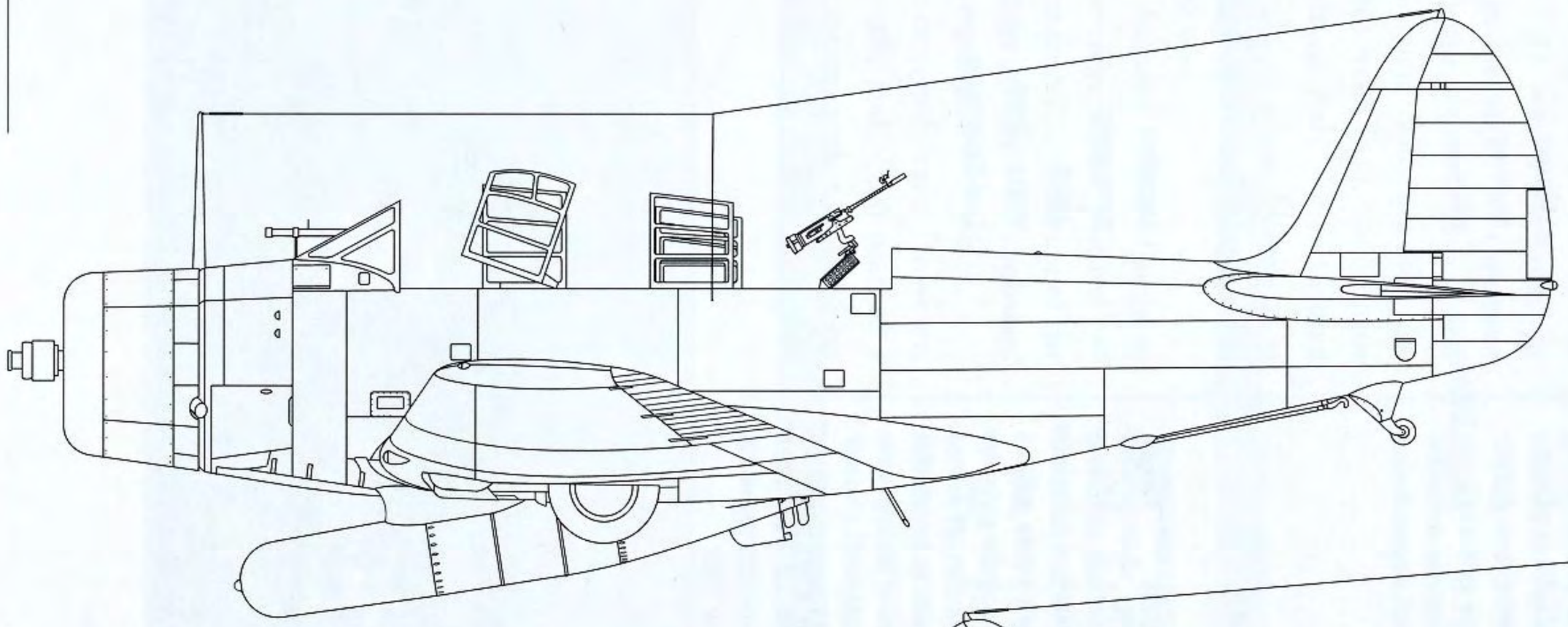
All drawings on this spread are of a Douglas TBD-1 Devastator, and they are to 1/72nd scale

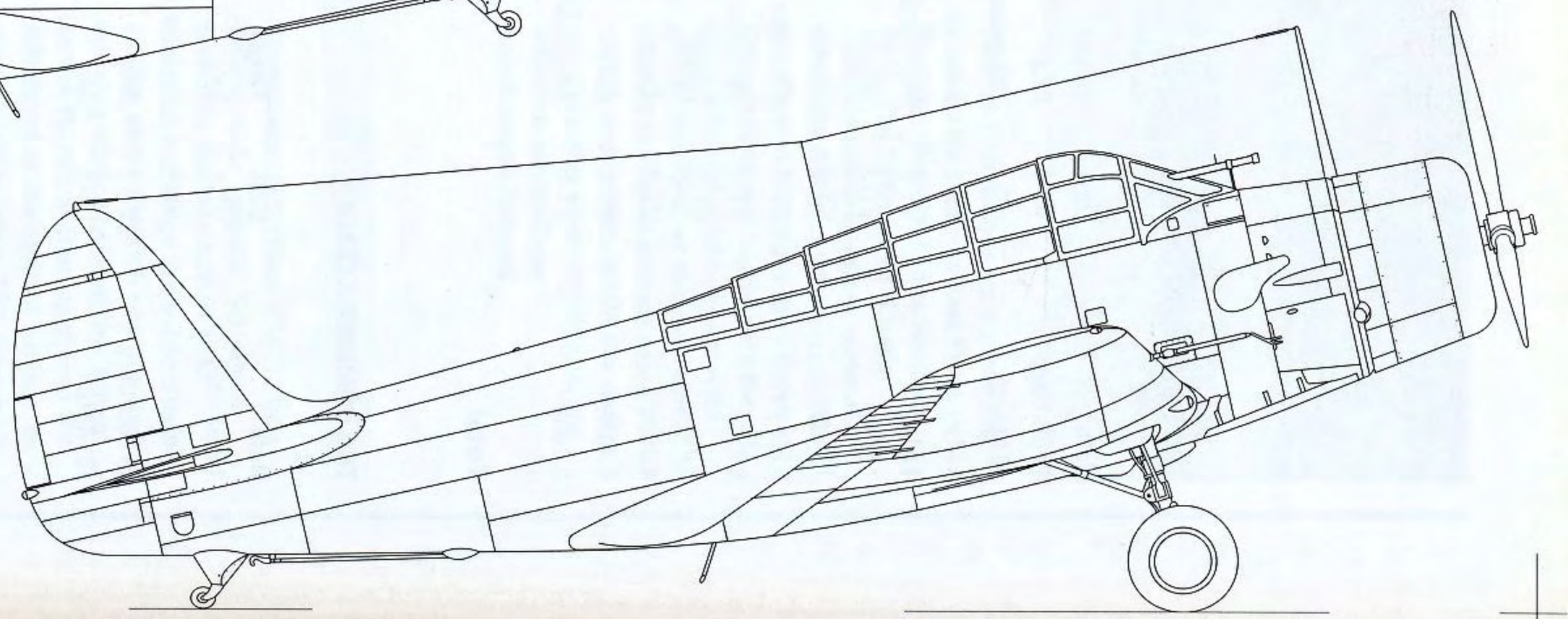
Bliss-Leavitt Mk 13 torpedo

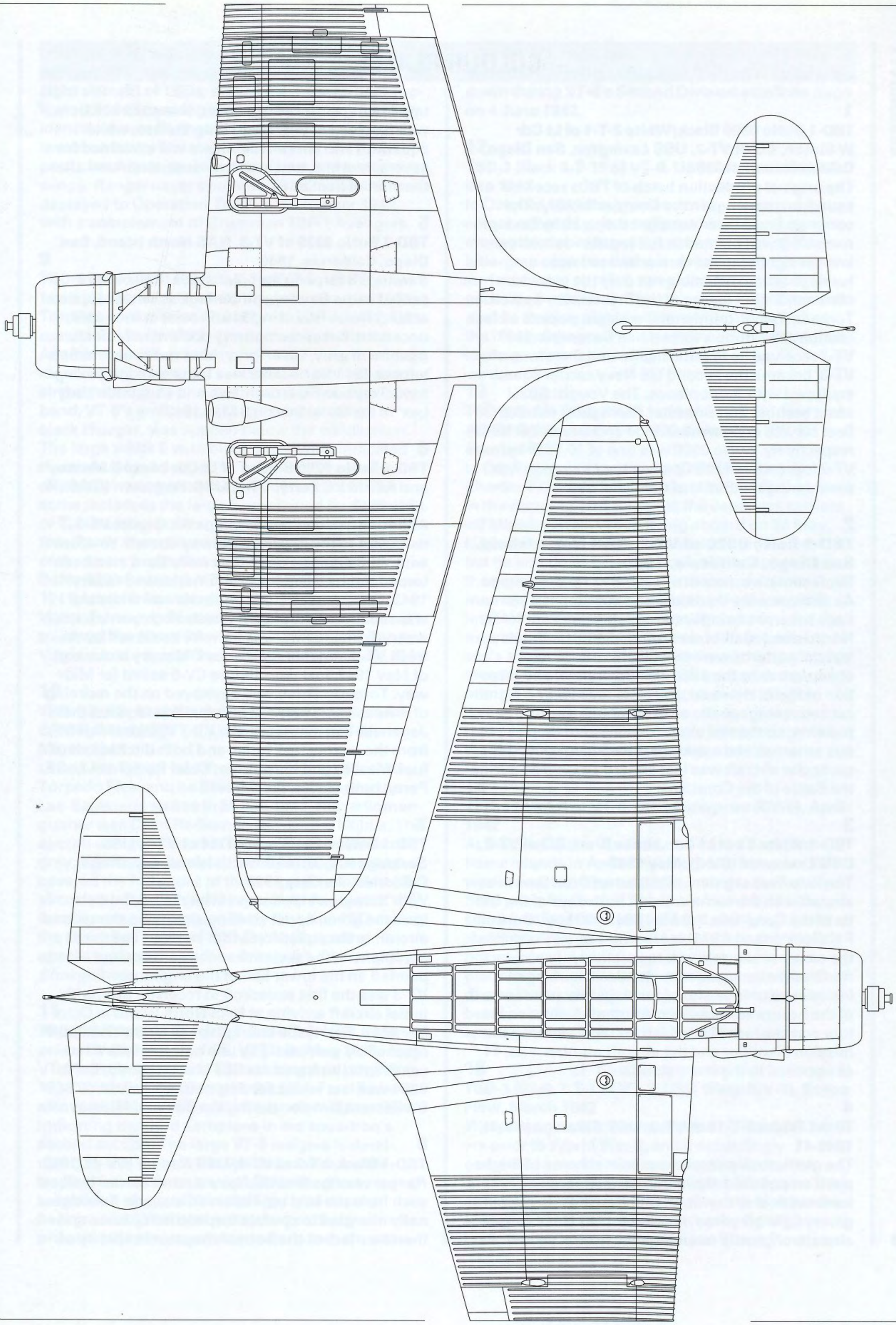




Mk 13 torpedo (field-modified with plywood boxes around the tail fins by VT-8 in May/June 1942)



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COLOUR PLATES

1
TBD-1 BuNo 0300 Black/White 2-T-1 of Lt Cdr W Sinton, CO of VT-2, USS *Lexington*, San Diego, California, early 1938

The original production batch of TBDs received squadron markings in the Douglas factory. The commanding officer's assigned aircraft in *Lexington's* VT-2 was painted in full regalia – lemon yellow tail signifying the carrier and red nose and fuselage stripe indicating not only the squadron commander but leader of the first section as well. Torpedo Two's 'bomb man' emblem depicts a black cannonball astride a torpedo. In December 1937 VT-2 received its first four TBDs and therefore, after VT-3, became the second US Navy carrier squadron equipped with monoplanes. The Vought SB2U scout bomber and Brewster F2A fighter entered fleet service in December 1937 and December 1939, respectively. BuNo 0300 was one of 10 TBD-1s from VT-2 lost on 8 May 1942 when the *Lexington* was sunk during the Battle of the Coral Sea

2
TBD-1 BuNo 0320 of VT-2, NAS North Island, San Diego, California, 1940

Representative aircraft of *Lexington* and *Saratoga* Air Groups were daubed with experimental camouflage schemes using water-soluble paints at NAS North Island, California during 1940. The Barclay 'dazzle' patterns were calculated to confuse observers as to the aircraft's size, range, and direction of flight. However, the tests revealed no significant advantage to the unusual colours and patterns, so the test aircraft reverted to their previous schemes and markings. Like BuNo 0300, this particular aircraft was lost aboard *Lexington* during the Battle of the Coral Sea.

3
TBD-1 White T1 of Lt Cdr James Brett, CO of VT-2, USS *Lexington* (CV-2), May 1942

Torpedo Two skipper Lt Cdr James Brett flew this aircraft with the same crew on both days of the Battle of the Coral Sea, 7-8 May 1942. AOM2/c Duncan F Hallock Jr and ARM1/c Albert D Hensley occupied the centre and rear seats, respectively. *Lexington* Air Group often used non-standard markings, including a unique size of fuselage star just forward of the horizontal stabiliser. Another distinctive feature was the lack of the dash or 'tack' between the mission identifier and the aircraft number – i.e. T1 as opposed to the more standard T-1.

4
TBD-1 White 3-T-12 of VT-3, USS *Saratoga* (CV-3), 1940-41

The glamorous peacetime colour scheme of bright paint on polished aluminium disappeared as America drew nearer to war. In October 1940 an overall glossy light grey was directed for US Navy carrier aircraft, originally retaining the chrome yellow upper wing surfaces. However, that contradiction was resolved at year end. Nevertheless, white squadron and aircraft identifiers were retained for several months, and in some cases continued after the start of hostilities.

5
TBD-1 BuNo 0339 of VT-3, NAS North Island, San Diego, California, 1940

Saratoga's torpedo aeroplanes were also represented in the Barclay camouflage schemes applied at NAS North Island in 1940. Precise colours are uncertain, but contemporary documents refer to a mixture of grey, silver-grey, blue and green. In September 1941 BuNo 0339 was transferred to *Lexington's* Torpedo Squadron Two and sank with 'Lady Lex' in the Coral Sea on 8 May 1942.

6
TBD-1 BuNo 0285 Black 1 of Lt Cdr Lance E Massey and ACRM L E Perry, VT-3, USS *Yorktown* (CV-5), 4 June 1942

Although assigned to *Saratoga* Air Group, VT-3 deployed to the Battle of Midway aboard *Yorktown* with VB-3 and part of VF-3 as well. 'Sara' had been torpedoed by a Japanese submarine in January 1942, leaving her squadrons in Hawaii while she was repaired on the West Coast. *Yorktown's* battle-weary Torpedo Five was therefore relieved by the fresh VT-3 under Lt Cdr Lance E Massey at the end of May 1942, just days before CV-5 sailed for Midway. Torpedo Three was destroyed on the morning of 4 June as Massey led his squadron against the Japanese carriers. Only two VT-3 TBDs emerged from the enemy task force, and both ditched out of fuel. Massey and his gunner, Chief Radioman Leo E Perry, both died in the battle.

7
TBD-1 BuNo 0294 Black 3-T-14 of VT-3, USS *Saratoga* (CV-3), NAS North Island, San Diego, California, January 1938

With *Saratoga's* distinctive white tail, 3-T-14 also bore the green upper cowling signifying the second aircraft in the squadron's fifth section. The third aeroplane in the section had the same colour painted on the lower half of the engine cowling. VT-3 was the first squadron to receive TBDs, with initial aircraft arriving at NAS North Island in October 1937. Nearly full strength of 18 aircraft had been reached by year end. The unit emblem was a red sea dragon wrapped about a black torpedo. BuNo 0294 was lost whilst serving as Black 7 within VT-6's Second Division during the Battle of Midway.

8
TBD-1 Black 4-T-2 of VT-4, USS *Ranger* (CV-4), 1942

Ranger was the first US Navy aircraft carrier built as such from the keel up. However, she was not originally intended to operate torpedo aeroplanes and therefore lacked the normal magazine capacity of

other carriers. Wartime requirements forced the addition of a small squadron (rarely more than eight aircraft) of TBDs, of which 4-T-2 was one. Typical mid-1942 markings are applied – black fuselage identifiers over blue-grey upper and medium grey lower surfaces. The large stars are carried in six positions: fuselage sides plus upper and lower wings. *Ranger* never operated TBDs in combat, but deployed to Operation *Torch* in November 1942 with a complement of Grumman TBF-1 Avengers.

9

TBD-1 BuNo 0331 Black 5-T-7 of VT-5, USS *Yorktown* (CV-5), NAS Norfolk, Virginia, summer 1938

TorpRon Five received its original TBDs during February and March 1938 – the first assigned to the Atlantic Fleet. The leader of VT-5's third section was identified by *Yorktown's* red tail and the individual aircraft number 7, plus the blue nose and fuselage band. VT-5's emblem, a Valkyrie mounted on a black charger, was applied below the windscreen. The large white E with black shadowing indicated that the assigned pilot had qualified for a 'battle efficiency' rating in annual gunnery competition. In some instances the large E was joined by a small B or T, indicating bombing or torpedo expertise. The B or T was about 50 per cent taller than the height of the lower horizontal stroke on the shaded E. BuNo 0331 flew with VT-5 from 1938 through to 1941, when it was transferred to VT-7, aboard *Wasp*. Surviving fleet service, the TBD served as a trainer at the Naval Proving Ground at Dahlgren, in Virginia, until it was finally scrapped in August 1944

10

TBD-1 BuNo 0319 Black 1 of Lt Cdr J F Taylor and CRM H S Nobbs, VT-5, USS *Yorktown* (CV-5), March 1942

Lt Cdr Joe Taylor was the commanding officer of Torpedo Five, and he flew this aircraft during the Lae-Salamaua strikes in March 1942. His radioman-gunner was Chief Radioman Harrison S Nobbs. The aircraft was painted matt blue-grey over medium grey, with large-diameter national insignia which covered the full chord of the wings. The individual aircraft number, a black 1, appeared forward of the fuselage star. Taylor also likely flew this TBD during the Coral Sea battle of 7-8 May 1942, leading attacks against the Japanese carriers *Shoho* and *Shokaku*, respectively.

11

TBD-1 BuNo 0327 Black 6-T-6 of VT-6, USS *Enterprise* (CV-6), NAS Norfolk, Virginia, May 1938

VT-6 welcomed its first TBDs during April and May 1938. With *Enterprise's* blue tail, 'Six-Tare-Six' was also identified by the white lower cowling section indicating the third aeroplane in the squadron's second section. The large VT-6 insignia is dominated by the Great White Albatross with a dark tropical funnel in the background rising to a representative T-shape within the light blue circular background. Whether by accident or design, the pre-war tail colour continued after a fashion with 'The Big E's' radio callsign during much of 1942 – 'Blue Base'. Flying as Black 14, BuNo 0327 was shot down during VT-6's Second Division attack on *Kaga* on 4 June 1942.

12

TBD-1 Black 6-T-13 of VT-6, USS *Enterprise* (CV-6), late 1941

In October 1941 the previous overall light grey colour adopted a year before was replaced by a more effective camouflage scheme. Non-specular blue-grey upper surfaces and medium grey lower surfaces were applied, as evidenced on this Torpedo Six Devastator. Black fuselage identifiers and a white landing signal officer stripe are typical of the immediate pre-Pearl Harbor period, with small fuselage stars containing the red centre.

13

TBD-1 BuNo 0289 Black 1 of Lt Cdr E E Lindsey and ACRM C T Grenat VT-6, USS *Enterprise* (CV-6), 4 June 1942

Lt Cdr Eugene E Lindsey and Chief Radioman Charles T Grenat flew this aircraft from *Enterprise* in the morning strike against the Japanese carriers off Midway Atoll. When flying aboard on 28 May, Lindsey crashed BuNo 0370 and injured his back, but he and Chief Grenat were well enough to lead the squadron on its ill-fated mission of 4 June. Both men were killed attacking the enemy ships, while just four of fourteen squadron aircraft survived the mission. Since 0370 was known to have been Lindsey's assigned aircraft, it is assumed that during the few days before the battle 0289 became a replacement '6-T-1', probably having been No 15 upon arrival aboard 'The Big E'. The change was more than likely accomplished simply by spraying over the second digit, leaving the numeral '1'.

14

TBD-1 Black 8 of VT-6, USS *Enterprise* (CV-6), April 1942

At the time of the Doolittle raid on the Japanese home islands in April 1942, Torpedo Squadron Six was in a state of fluctuating markings, as was all of *Enterprise* Air Group. The Devastators had either small fuselage stars just forward of the horizontal stabiliser or large ones just aft of the rear cockpit – not an unusual situation at that stage of the war. Black individual aircraft numbers appeared forward of small stars and aft of large ones, with the number repeated on the trailing edge of the wing approximately even with the stabiliser tips.

15

TBD-1 Black 7-T-7 of VT-7, USS *Wasp* (CV-7), Scapa Flow, March 1942

Wasp was smaller than most other US aircraft carriers prior to World War 2, and it accordingly embarked an undersize torpedo squadron. The ship's initial combat occurred in the European Theatre, delivering RAF Spitfire fighters to Malta in the spring of 1942. To make room for the British aircraft, the TBDs were left ashore at Scapa Flow, in

the Orkney islands. 'Seven-Tare-Seven' displays typical early-war markings – blue-grey upper and light grey lower surfaces, with large stars in addition to rudder stripes. However, at the same time some VT-7 aircraft had small fuselage stars. Although photos clearly show Torpedo Seven TBDs with side numbers as high as eight, aircraft data cards only account for five, namely BuNos 0302, 0307, 0331, 0347 and 0349. VT-7 re-equipped with TBF-1 Avengers before sailing for the Guadalcanal campaign, where the ship was sunk by a Japanese submarine in late September.

16

TBD-1 BuNo 1506 Black T-16 of Lt Cdr J C Waldron and ACRM H F Dobbs, VT-8, USS *Hornet* (CV-8), 4 June 1942

Commanding Torpedo Eight from its inception to the disastrous mission against Japanese carriers off Midway, Lt Cdr John C Waldron was the strongest leader in *Hornet* Air Group. Leading the squadron's first combat mission, his diversion from the course steered by the inexperienced air group commander resulted in VT-8 being the only *Hornet* squadron to find Vice Adm Nagumo's carriers that day. Attacking without fighter escort, VT-8 was destroyed in detail as Waldron's pilots all sought to follow his last order: 'Go in and get a hit'. Waldron and Chief Horace F Dobbs were killed in T-16, as T-1 was not ready in time for the launch that morning. Torpedo Eight aircraft variously had the side number placed forward or aft of the fuselage star – available evidence indicates that most were aft.

17

TBD-1 White 42-S-16 of VS-42, USS *Ranger* (CV-4), NAS Norfolk, Virginia, 1941

Although rarely assigned to scouting squadrons, some TBDs served in VS units before the attack on Pearl Harbor. This aircraft appeared in the overall semi-gloss light grey scheme of 1941. VS-42 was assigned to USS *Ranger* of the Atlantic Fleet, and although engaged in the so-called 'Neutrality Patrol', did not carry the distinctive national emblem on the cowling as did many carrier aircraft assigned that duty. Scouting 42 received three TBDs between January and October 1941 – BuNos 0296, 0356 and 1509. It is unlikely that they flew with torpedoes when embarked for the scouting mission dictated otherwise, and *Ranger* was built without torpedo storage, although modifications were subsequently made.

18

TBD-1A BuNo 0268 Black 2X^{D1}1 of the Naval Torpedo Station, Newport, Rhode Island Naval Base, 1939

The first production TBD, BuNo 0268, was converted into a floatplane and redesignated the sole TBD-1A. It was assigned to the Naval Torpedo Station at Newport, Rhode Island Naval Base, as a vehicle for conducting weapon tests. Its rare side marking, 2X1, was rendered more unusual with the addition of a small 'D1' between the X and 1, the overall designator indicating that the TBD-1A was an Experimental Squadron 2 aircraft assigned to the 1st Naval District. BuNo 0268 was stricken from the navy list on 23 September 1943.

19

TBD-1 BuNo 0358 Black 78 of Naval Air Training Command, NAS Pensacola, Florida, 1939

Nine new TBDs (BuNos 0350-0358) were delivered directly to the navy's main aviation training base at Pensacola, Florida, in April 1938. One (0351) was destroyed in July of that year with only 79 flight hours logged, and the others were retained for familiarisation with fleet-type aircraft during the build-up of pilots and aircrews prior to World War 2. However, the 'fam birds' were allotted to fleet squadrons during 1941, although most eventually returned to East Coast bases of Operational Training Command, where they were stricken from the navy rolls in 1943-44. BuNo 0358 went to VT-5 in July 1941, then transferred to Torpedo Four in December, where it remained until August 1942. The TBD was stricken on 30 January 1943.

20

TBD-1 White 600 of Naval Air Training Command, NAS Corpus Christi, Texas, early 1943

After the last Devastators left squadron service in late 1942, surviving TBDs were mostly assigned to Naval Air Operational Training Command facilities on the East Coast. At least five surviving Douglases were based at NAS Corpus Christi, Texas, where newly-winged pilots learned the basics of torpedo tactics before joining their fleet squadrons. In early 1943 this aircraft had the blue-grey over medium grey basic colour scheme with 1943 stars, although it retained the pre-war small fuselage emblem with the red centre painted out. White 600 series numbers on fuselage and cowling identified the individual aircraft. Photographs indicate that some TraCom TBDs may have sported red fuselage bands superimposed with the national insignia, further identifying a training aircraft.

21

TBD-1 BuNo 0299 Black 71-S-16 of Lt B V Clark and RM1/c H G Bradshaw, VS-71, USS *Wasp* (CV-7), Atlantic, June 1941

Unusual in that it bore *Wasp's* pre-war colours featuring a black tail, 71-S-16 also displayed the prominent 'neutrality star' on the nose. BuNo 0299 was one of eight Devastators assigned to the scouting squadron during 1940-1941. It arrived with 0296 from NAS Miami on 20 December 1940 and was joined by six more TBDs from VS-72, VB-4, Pensacola and San Diego over the next six months. Scouting 71's peak TBD period was the summer of 1941, when five Douglases augmented the squadron's Vought SB2Us. BuNo 1508 crashed in February 1941 and 'Sail 16' was lost at sea on 23 May. Lt B V Clark died in the accident, but his rear seat man, Radioman 1st Class H G Bradshaw, survived. The squadron's remaining TBDs were transferred to VT-5 and VT-8 from August to October.

22
TBD-1 BuNo 0353 White 82 of Naval Air Training Command, NAS Pensacola, Florida, circa 1940
Bureau Number 0353 was delivered to NAS Pensacola in April 1938 and remained in Training Command until July 1941. At that time it joined VT-5 in USS *Yorktown* and remained aboard through the Coral Sea cruise in May 1942. The squadron was disestablished and the aircraft were taken over by the fleet pool at Pearl Harbor, Hawaii, until late that summer. In September BuNo 0353 went to NAS Miami, Florida, remaining an operational trainer for the next 12 months. On 2 September 1943 it suffered engine failure during a torpedo exercise and was successfully ditched offshore. Civilian efforts to retrieve the Devastator for exchange with the Naval Aviation Museum in Pensacola have been repeatedly foiled by the navy and the museum.

COLOUR SECTION

1
VT-8's CO, Lt Cdr J C Waldron (right), poses with his Radioman-Gunner, ACRM H F Dobbs, in front of TBD-1 T-16 (BuNo 1506) on the eve of his unit's fateful mission on 4 June 1942
(*all colour photos via Mark Horan*)

2
Sea2c F S Polston (left) and Ens W W Creamer check that the Mk 13 torpedo fitted to their TBD (T-6 BuNo 0293) has been correctly secured

3
ARM2c R J Fisher (left) and Lt(jg) G M Campbell lean on a suitably decorated torpedo slung beneath the belly of TBD T-11 (BuNo 0364) parked on the deck of *Hornet*

4
ARM1c A Maffei (left) and Second Division leader (and VT-8 XO) Lt J C Owens Jr looked relaxed for the camera prior to climbing aboard T-9 (BuNo 0295). Like the remaining crews featured on this page, they were killed in action at Midway

5
Like all the colour photos featured in this gallery, this shot is cropped from the 1943 colour film *Torpedo Squadron Eight*, which was put together by Cdr John Ford of Hollywood movie fame at the behest of *Hornet's* captain at the Battle of Midway, Rear Adm Marc Mitscher. The footage itself was shot on *Hornet* by the ship's photographers. Only 30 copies of this seven-and-a-half-minute film were made – one for each of the families of the 29 members of VT-8 killed on 4 June 1942, and one for the sole survivor, Ens George Gay. This image shows T-7 (BuNo 0284) being 'wound up' in mid-May 1942

6
An action shot of *Hornet's* 4 June launch in progress. This aircraft is T-3 (BuNo 0297) of VT-8's First Division, crewed by Ens W R Evans Jr and ARM3c R E Bibb Jr

7
T-5 (BuNo 308) moves forward on *Hornet's* wooden deck in mid-May 1942

8
T-3 (BuNo 0297) is also seen preparing for launch in the Coral Sea in mid-May 1942

9
T-4 (BuNo 0321) commences its take-off run from *Hornet* on 4 June 1942

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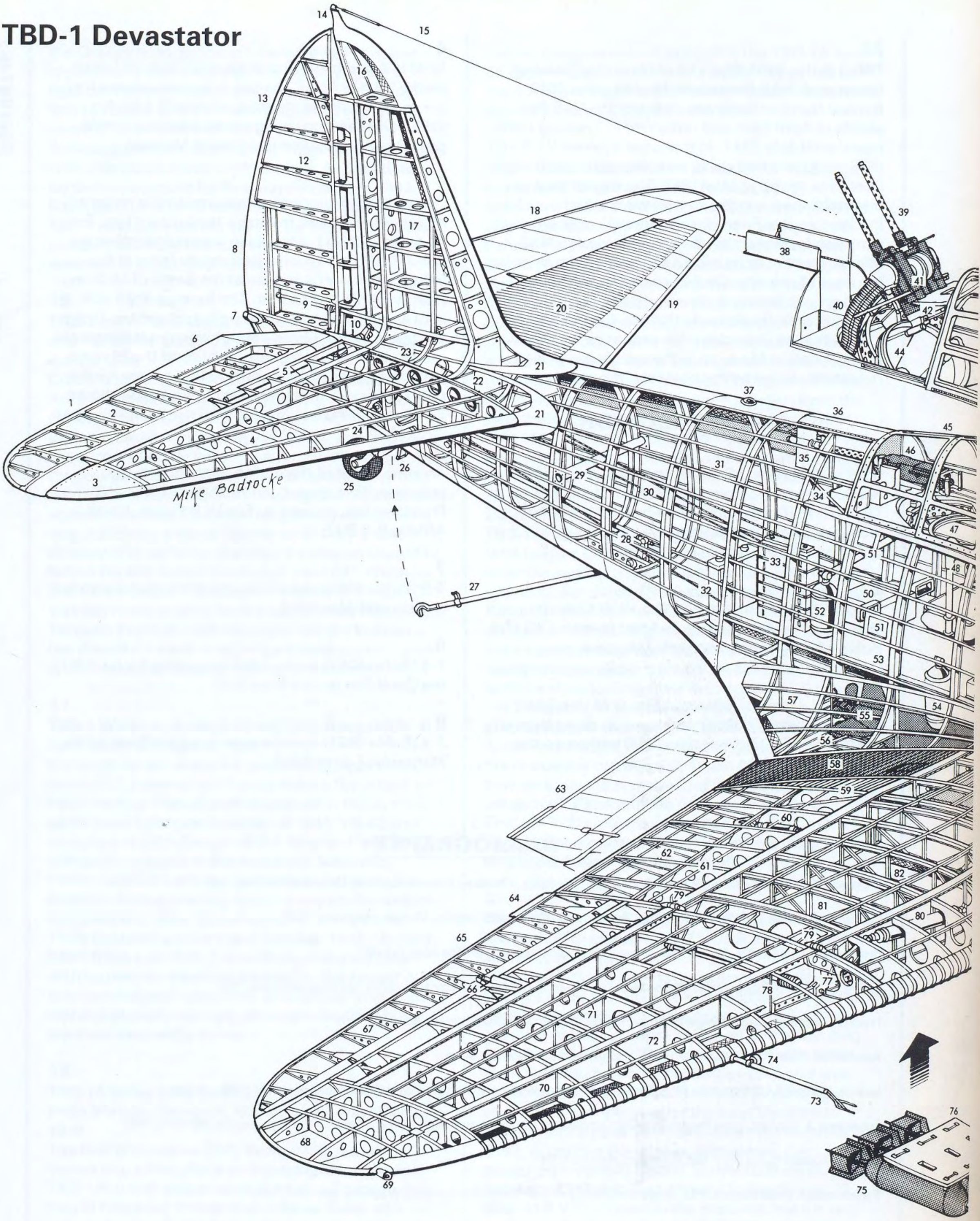
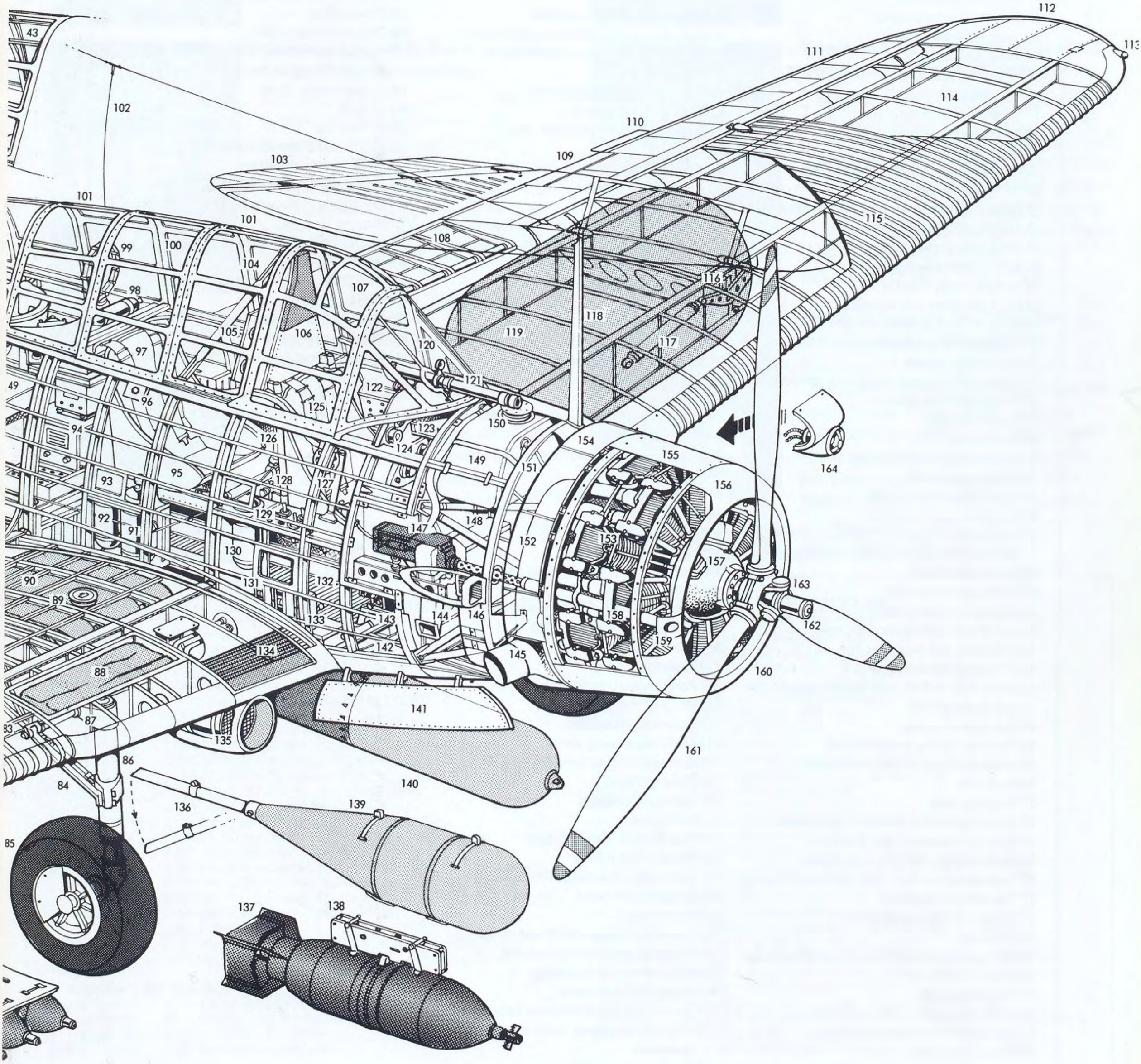
TBD-1 Devastator

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DOUGLAS TBD-1 DEVASTATOR

1 Starboard fabric-covered elevator
2 Elevator rib construction
3 Tailplane tip fairing
4 Tailplane rib construction
5 Elevator torque shaft
6 Elevator trim tab
7 Tail navigation light
8 Rudder trim tab
9 Trim tab cable control
10 Elevator hinge control
11 Rudder torque shaft
12 Rudder rib construction
13 Fabric-covered rudder
14 Aerial attachment
15 HF aerial cable
16 Fin-tip fairing
17 Tailfin construction
18 Port fabric-covered elevator
19 Port tailplane
20 Tailplane corrugated skin panelling
21 Fin/tailplane root fairings
22 Fin root structure integral with rear fuselage
23 Tailwheel shock absorber strut
24 Fixed castoring tailwheel
25 Solid rubber tailwheel tyre
26 Arrestor hook snubber
27 Deck arrestor hook, lowered
28 Arrestor hook release linkage
29 Fuselage lifting bar fitting
30 Tail control cables
31 Fuselage frame and stringer construction
32 Parachute flare launcher
33 Radio coil rack
34 First aid box
35 Gun stowage compartment
36 Hinged gun doors
37 Upper identification light
38 Gun doors, open position
39 Twin 0.30-in Browning machine guns (VT-8 modification for Battle of Midway)
40 Ammunition feed
41 Pivoted gun mounting
42 Gunner's armour plating
43 Canopy aft-sliding sections, open
44 Swivelling gun mounting ring
45 Aft canopy sections, closed
46 Single 0.30-in (7.62-mm) Browning machine gun (standard fit)
47 Gun mounting ring
48 Port side trailing aerial fairlead
49 Radioman/gunner's swivelling seat
50 Footrests
51 Boarding step
52 Smoke generator carbon dioxide bottle
53 Gunner's compartment floor level
54 Radioman/gunner's oxygen bottle
55 Torpedo tail section, semi-recessed housing
56 Flap inboard segment
57 Wing root filler construction
58 Walkway
59 Corrugated, strengthened inner skin panel
60 Flap hydraulic jack
61 Flap shroud ribs
62 Starboard split trailing-edge flap
63 Starboard wing folded position
64 Fixed aileron tab
65 Starboard fabric-covered aileron
66 Aileron hinge control
67 Aileron rib constriction
68 Wing-tip rib construction
69 Starboard navigation light
70 Leading-edge nose ribs
71 Outer wing panel rib construction
72 Front spar
73 Pitot head
74 Temperature probe
75 100-lb (45-kg) HE bombs, maximum load 12
76 Underwing bomb racks, two per wing
77 Wing fold hinge actuator
78 Manual locking linkage
79 Spar hinge joints
80 Wing fold hydraulic actuator
81 Inner wing panel lattice rib construction
82 Semi-recessed mainwheel housing
83 Retraction linkage
84 Undercarriage leg side strut
85 Starboard mainwheel
86 Main undercarriage shock absorber leg strut
87 Leg pivot fixing
88 Flotation bag stowage
89 Fuel filler cap
90 Starboard main fuel tank, total fuel capacity 150 Imp gal (180 US gal/681 l), plus 22.5 Imp gal (27 US gal/102 l) reserve
91 Flotation bag inflation bottle
92 Assistant pilot/bombardier's oxygen bottle
93 Boarding step
94 Radio equipment racks
95 Assistant pilot/bombardier's seat
96 Canopy external release
97 Safety harness
98 Hand fire extinguisher
99 D/F loop aerial
100 Rearward-sliding middle cockpit canopy section
101 Fixed glazed canopy sections
102 Aerial lead-in
103 Port wing folded position
104 Turn-over pylon
105 Assistant pilot's instrument panel
106 Pilot's headrest
107 Sliding front cockpit canopy cover
108 Port split trailing-edge flap
109 Aileron trim tab
110 Fixed tab
111 Port fabric-covered aileron
112 Wing-tip fairing
113 Port navigation light
114 Folder outer wing panel
115 Corrugated wing skin panelling
116 Wing fold joint
117 Hydraulic actuator
118 Aerial mast
119 Port flotation bag (inflated)
120 Windscreen panels
121 Pilot's Mk III Model 2 telescopic gunsight
122 Oxygen rebreather
123 Chart case
124 Upper and lower instrument panels
125 Pilot's seat and safety harness
126 Adjustable sear mounting
127 Hydraulic hand pump
128 Second cockpit duplicated flying controls
129 Side console panel, hydraulic systems selectors
130 Pilot's oxygen bottle
131 Lower deck window
132 Bombardier's kneeling lower deck position
133 Bomb release levers
134 Wing root walkway
135 Oil cooler
136 Smoke tank nozzle
137 500-lb (227-kg) HE bomb
138 Fuselage bomb racks (two)
139 Smoke tank
140 Bliss-Leavitt Mk 13 21-in (53-cm) torpedo
141 Bomb-aiming doors, open
142 Bombardier's ventral aiming window
143 Norden XV-3 bombsight
144 Cartridge case ejection chute
145 Exhaust stub
146 Carburettor air intake
147 Fixed forward-firing 0.30-in or 0.50-in (7.62 mm or 12.7 mm) Browning machine guns
148 Engine bearer struts
149 Oil tank
150 Oil filler cap
151 Engine bay fireproof bulkhead
152 Exhaust collector ring
153 Pratt & Whitney R-1830-64 two-row 14-cylinder radial engine
154 Cowling air flaps
155 Detachable engine cowling panels
156 Cowling nose ring
157 Propeller reduction gearbox
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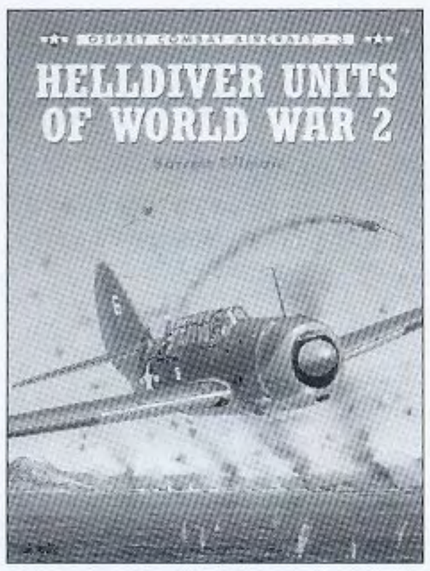

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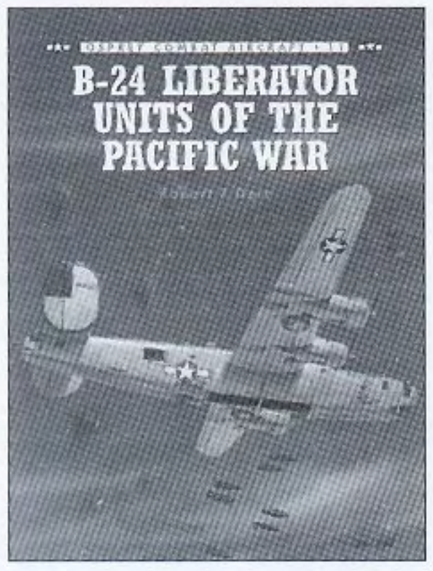

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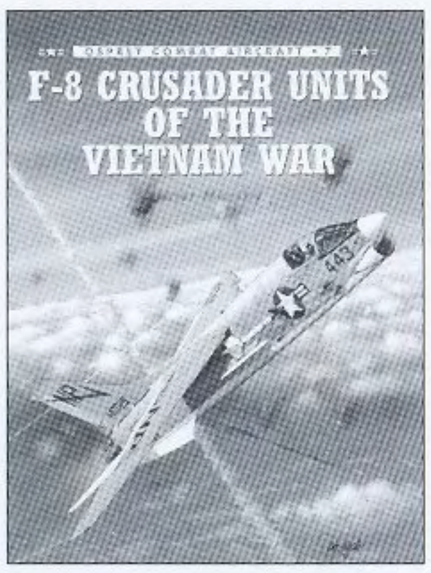

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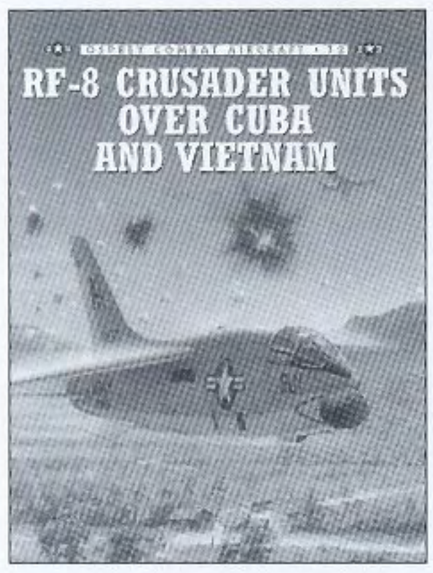

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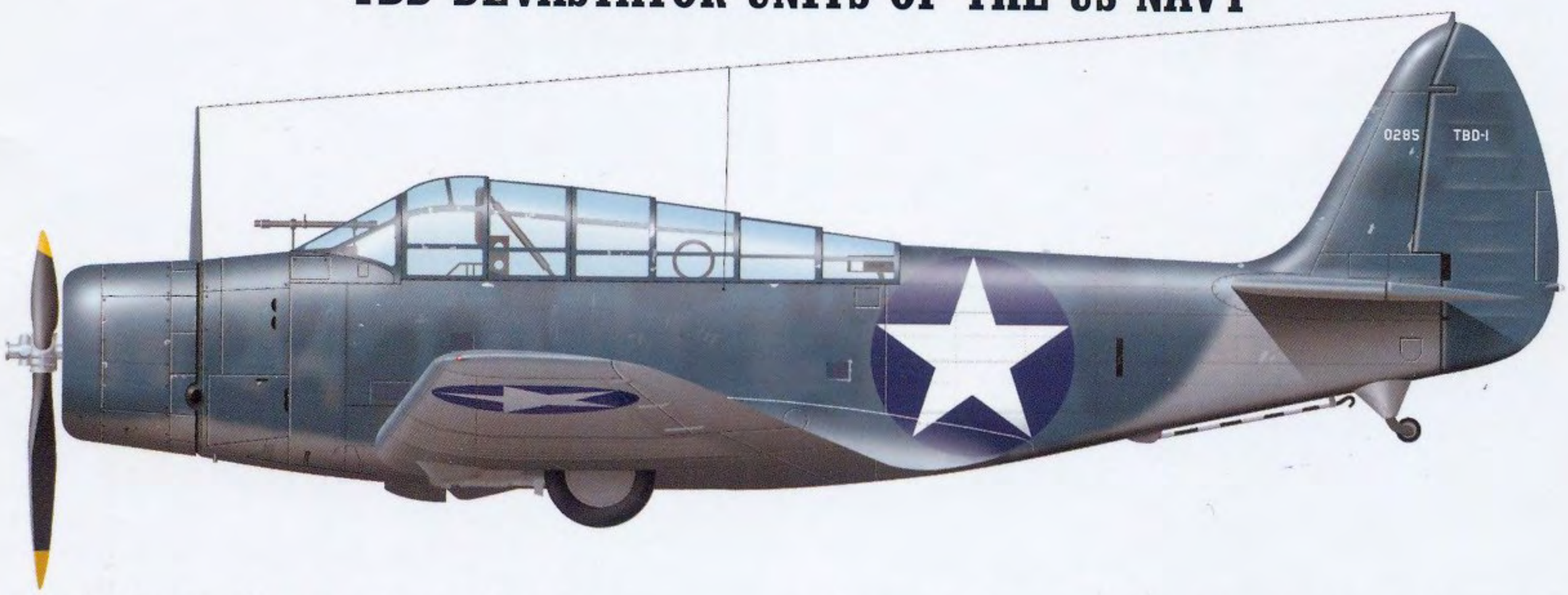
TBD DEVASTATOR UNITS OF THE US NAVY



Noteworthy for the fact that it was the first monoplane aircraft ordered for use by the US Navy for carrier operations, the Douglas TBD Devastator was designed to fulfil a requirement for a new torpedo bomber. First flown in April 1935, just 129 were built by Douglas. When it entered service in June 1937, it was the most modern aircraft of its type in service anywhere in the world. By the time of the Pearl Harbor raid in December 1941 the aircraft was thoroughly obsolete. However, as the navy's primary torpedo-bomber, it was thrown into the fray at the pivotal Battles of the Coral Sea and Midway in May and June 1942, and suffered terribly at the hands of Japanese carrier-based fighters. Few books have been published about the Devastator, and this all-new title covers both its important pre-war service and its fateful contribution to the war in the Pacific.

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