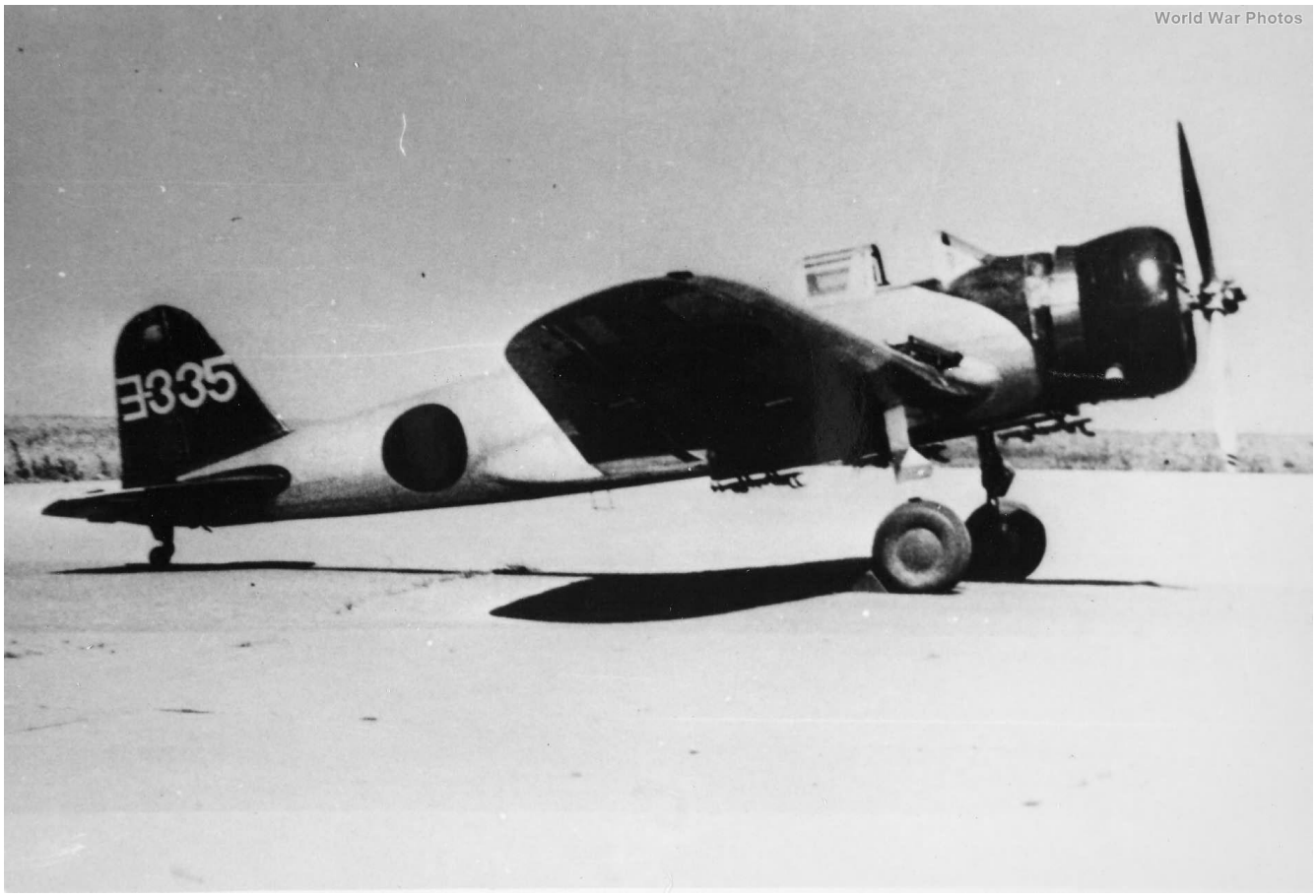
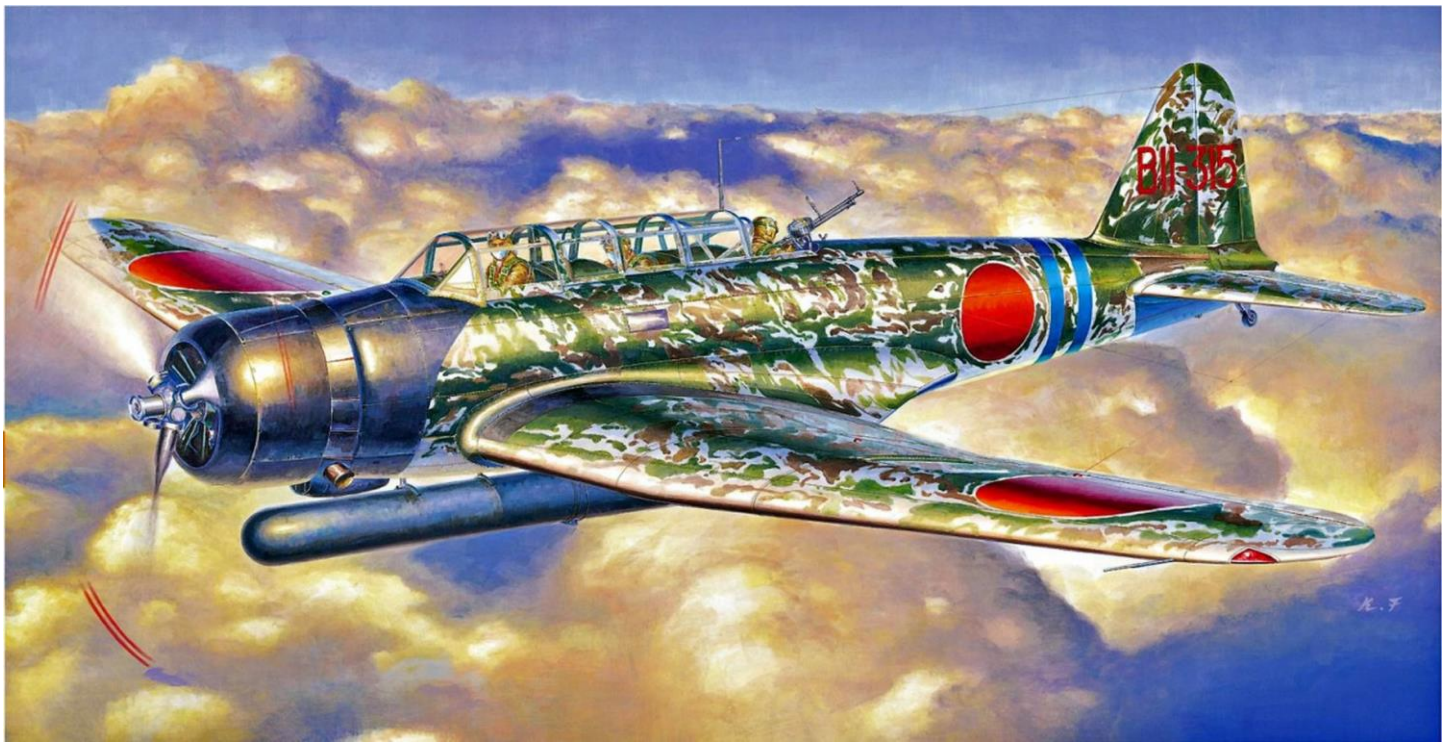
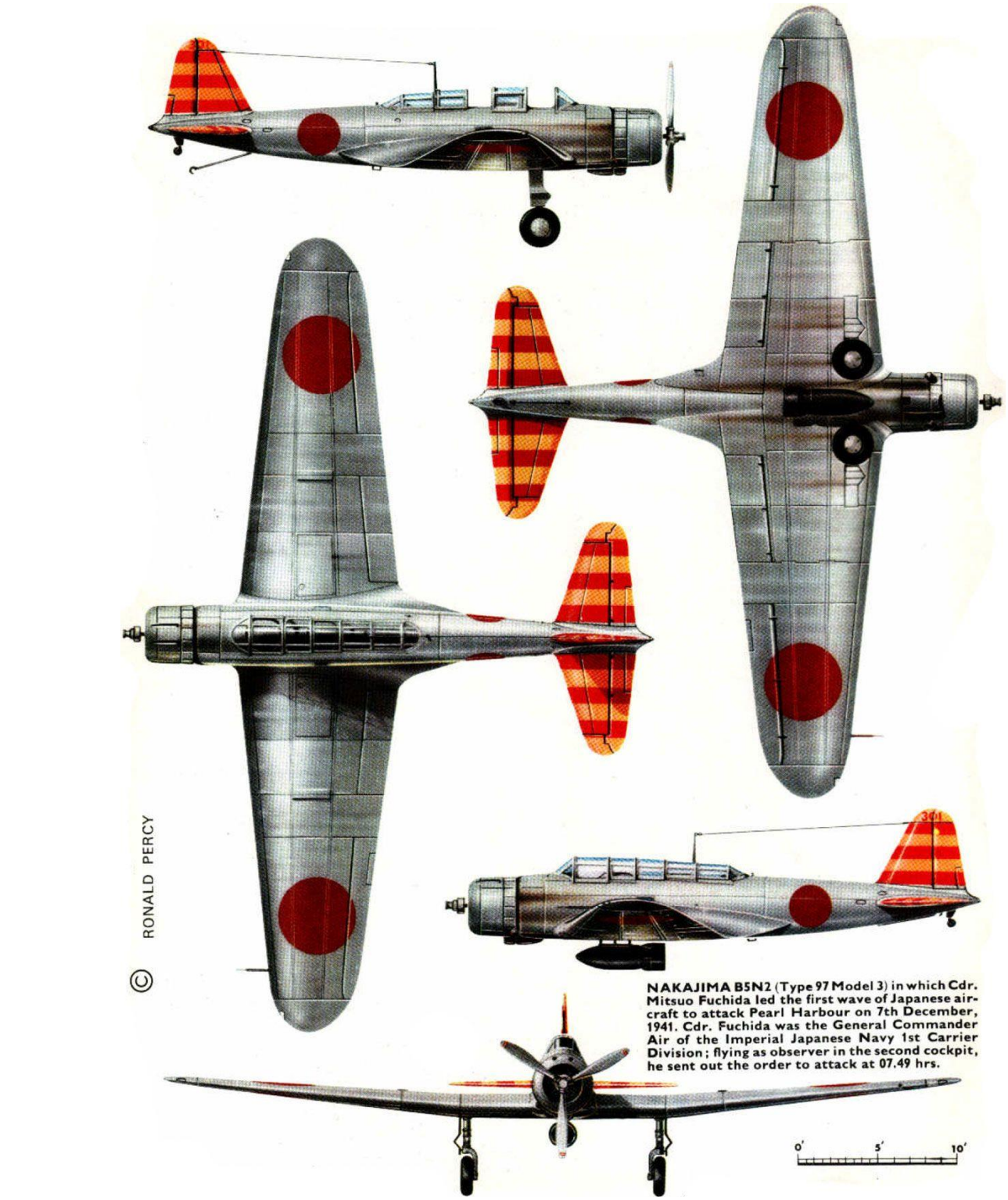
NAKAJIMA B5N ‘KATE’



Devenu célèbre à la suite de sa participation à l’attaque sur Pearl Harbor, en décembre 1941, le bombardier torpilleur **Nakajima B5N**, connu sous le nom de code allié de « **Kate**« , fut conçu en vue de servir sur les porte-avions de la marine japonaise. Il put paraître dépassé en tant que torpilleur en 1941, mais tout autant que le TBF Avenger américain ou le Swordfish britannique, tous des appareils remarquables. Cet avion était issu d’une demande des militaires japonais en 1935 pour un avion torpilleur remplaçant le biplan B4Y1. Il avait été conçu en 1936. Le premier prototype de cet appareil vola en janvier 1937, avec un Hikari 2 en étoile de 800 ch, qui fut remplacé par un Hikari 3 de 840 ch sur la version de série initiale, le **B5N1**. Ce monoplan à aile basse servi par un équipage de trois hommes possédait un train d’atterrissage escamotable et des lignes d’une remarquable pureté.



Le « **Kate** » fut utilisé pour des missions de bombardement léger en Chine, et, en 1939, le B5N1 fut remplacé par le **B5N2**. Cette version améliorée était équipée d'un moteur Sakae 11 plus puissant logé dans un capot plus petit, mais l'armement et la capacité d'emport de bombes étaient inchangés. Ces appareils coulèrent au cours des douze mois qui suivirent les porte-avions américains Hornet, Lexington et Yorktown. Ces avions étaient cependant assez vulnérables en raison de leur faible vitesse et du manque de blindage pour l'équipage et pour les réservoirs de carburant. Pourvus d'une seule mitrailleuse en guise d'armement défensif et chargés d'une bombe ou d'une torpille volumineuse, les **B5N** commencèrent cependant à subir des pertes très lourdes et les avions subsistants furent retirés des combats. La production du **B5N**, qui se poursuivit jusqu'en 1943, s'éleva à 1.149 exemplaires. Dépassé en 1943, le B5N2 ne fut plus utilisé que pour des patrouilles maritimes et anti sous-marines. Ces B5N « Kate » basés à terre furent équipés de radar de recherche de surface ou de détecteurs d'anomalies magnétiques pour repérer les sous-marins.



Source : https://www.avionslegendaires.net/avion-militaire/nakajima-b5n-kate/

Version anglaise wikipédia

The **Nakajima B5N** (Japanese: 中島 B5N, Allied reporting name "**Kate**") was the standard carrier-based torpedo bomber of the Imperial Japanese Navy (IJN) for much of World War II. It also served as a high level bomber. Although the B5N was substantially faster and more capable than its Allied counterparts, the American Douglas TBD Devastator monoplane (the U.S. Navy's first all-metal, carrier-borne monoplane of any type with retracting gear), and the British Fairey Swordfish and Fairey Albacore torpedo biplanes, it was nearing obsolescence by 1941. Nevertheless, the B5N operated throughout the whole war, due to the delayed development of its successor, the B6N. In the early part of the Pacific War, when flown by well-trained IJN aircrews and as part of well-coordinated attacks, the B5N achieved particular successes at the battles of Pearl Harbor, Coral Sea, Midway, and Santa Cruz Islands.[2][3]

Design and development

The B5N was designed by a team led by Katsuji Nakamura in response to a 1935 specification by the Navy for a torpedo bomber to replace the Yokosuka B4Y. Internally designated **Type K** by Nakajima, it successfully competed with the Mitsubishi B5M for a production contract. The first prototype flew in January 1937 and was ordered into production soon afterwards with the full designation **Type 97 Carrier Attack Bomber**[4] (九七式艦上攻撃機) (*kyū-nana-shiki kanjō kōgeki-ki* or *kankō* for short).[5] Combat experience during the Second Sino-Japanese War revealed several weaknesses in the original **B5N1** production model. These were mainly concerned with the lack of protection that the design offered its crew and its fuel tanks. Keen to maintain the high performance of the type, the Navy was reluctant to add weight in the form of armor, and instead looked to obtaining a faster version of the aircraft in the hopes of outrunning enemy fighters. The **B5N2** was given a much more powerful engine - Nakajima's own *Sakae* Model 11, 14-cylinder twin-row radial, as used in the initial models of the Mitsubishi A6M fighter – and various modifications were made to streamline it. Although its performance was only marginally better, and its weaknesses remained unremedied, this version replaced the B5N1 in production and service from 1939.

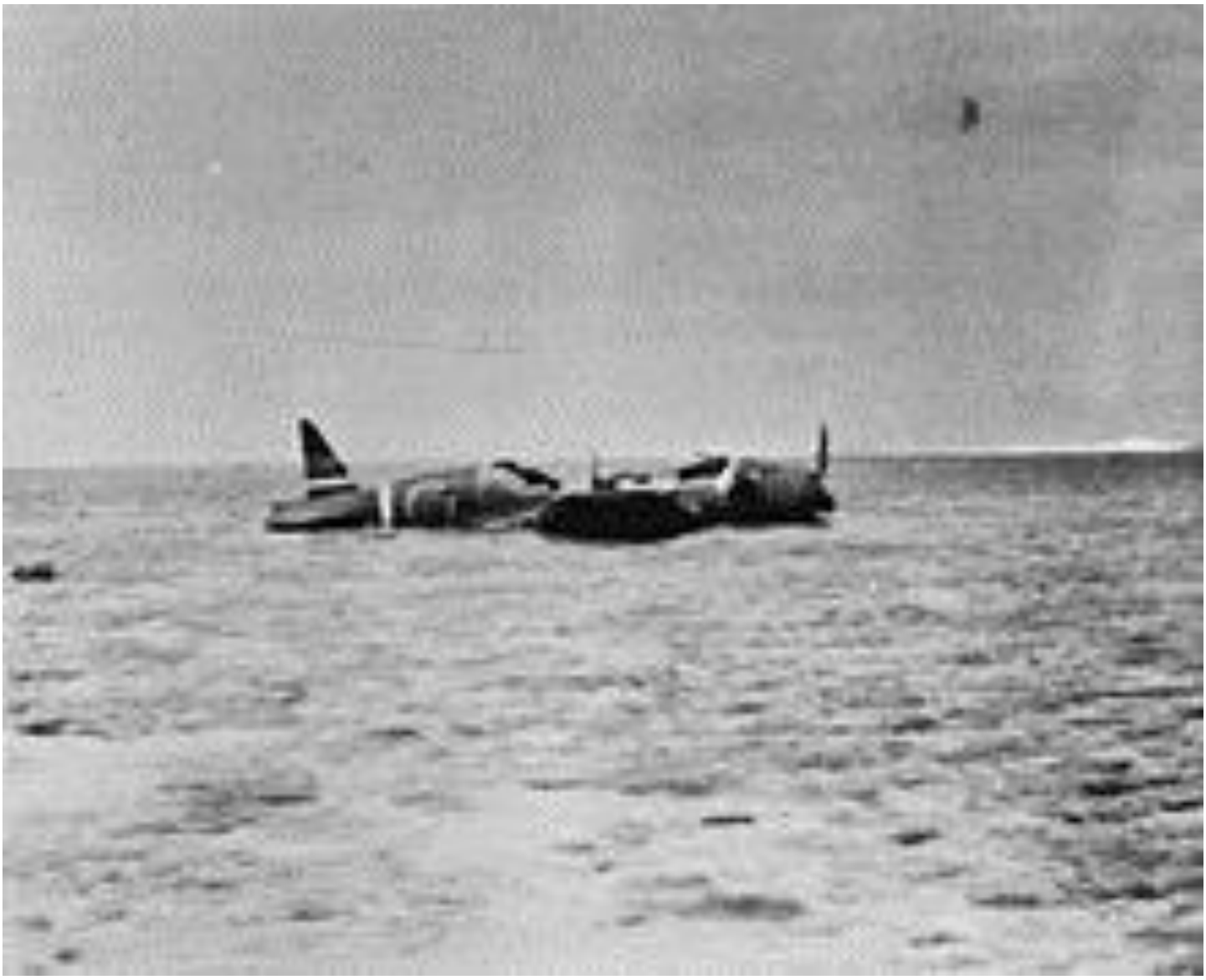
Equipment

Type 88 bombsight, torpedo release lever, and manual bomb release from a Nakajima B5N2 "Kate" at the Pearl Harbor Aviation Museum

The navigator/bombardier/observer position was equipped with a Type 90 bombsight, which was a long vertical tube located in the front-left of the seat. There was also a Type 3 reflector compass for precise navigation that was mounted on the top of the cockpit frame. The radio-operator/gunner position was equipped with one of the standard-issue radio sets for navy three-seater aircraft (Type 96 Mk3 earlier and Type 2 Mk3 later) that was mounted in front of the radio-operator/gunner's seat and behind the navigator/bombardier/observer's seat.[6][7] The radio-operator/gunner also operated one flexible 7.7 mm (.303 in) Type 92 machine gun at the rear end of the cockpit. One Type 91 torpedo could be mounted on the racks that were fixed eccentrically to the right at the bottom of the fuselage. Alternatively, racks could be replaced to carry either one 800 kg bomb (e.g., Type 99 No 80 armor-piercing bomb) or two 250 kg bombs (e.g., Type 98 No 25 land bomb) or six 60 kg bombs (e.g., Type 2 No 6 land bomb). Replacing the racks and exchanging between the torpedo and bombs was not a trivial process and could take more than two hours to complete.[8] Initially, most of the B5N bombers were painted in silver, which was the color used throughout the early stages of the Second Sino-Japanese War. The color eventually changed to dark green before the start of the Pacific War.[9]

Operational history

Nakajima B5N2 "Kate"



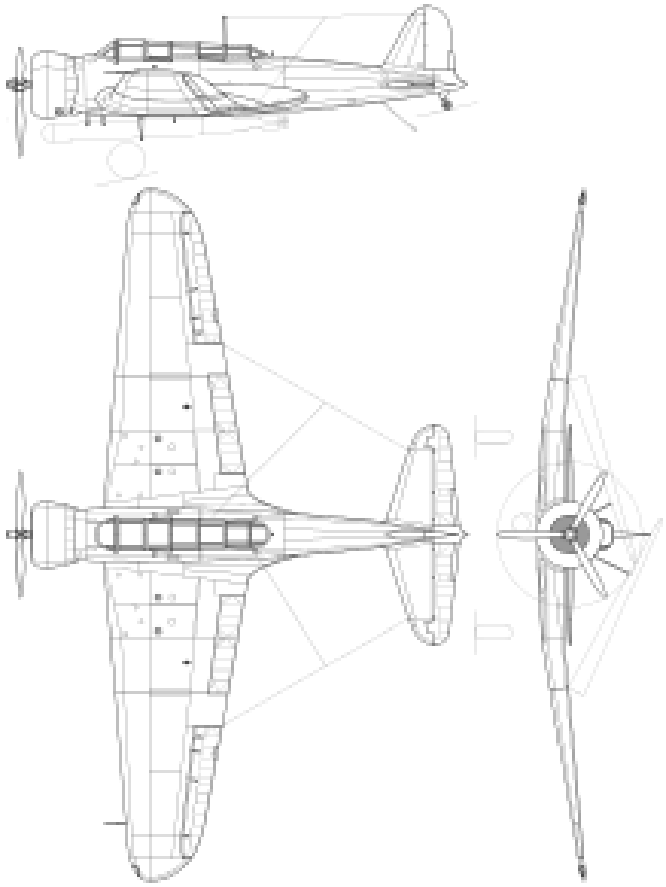
A crashed Nakajima B5N2 "Kate" (tail marking "EI-306") from *Shōkaku*

A B5N1 "Kate" parked in front of a hangar

The B5N was primarily employed as a carrier-based aircraft and occasionally as a land-based bomber. It carried a crew of three: pilot, navigator/bombardier/observer, and radio-operator/gunner.[10]

Like with other IJN multi-seat aircraft, an individual bomber was commanded by the senior ranking crew member aboard, which could be the observer rather than the pilot.[11] The initial model B5N1 first saw action in the Second Sino-Japanese War in 1938. The updated B5N2 played a major role in the Attack on Pearl Harbor. One of the B5N2s carried Mitsuo Fuchida, the commander of the attack, with one high-level bomber from the carrier *Hiryū* credited with sinking the American battleship *Arizona*. The B5N2 torpedo bombers also sunk the battleships *West Virginia*, *California*, *Oklahoma* and *Utah*. Five torpedo bombers were shot down in the first wave. Apart from this raid, the greatest successes of the B5N2 were the key roles it played in sinking the United States Navy aircraft carrier *Lexington* at the Battle of the Coral Sea and the aircraft carrier *Hornet* at the Battle of the Santa Cruz Islands, and the disabling of the aircraft carrier *Yorktown* at the Battle of Midway, later sunk by the Japanese submarine *I-168*.[2][3] B5N2 torpedo bombers normally performed a coordinated attack on enemy carriers with Aichi D3A dive bombers. Ideally, dive bombers would help to suppress the ship's anti-aircraft fire, which improved the chances of success for the slow-flying torpedo bombers.[11] During the Battle of the Eastern Solomons, the IJN tried to minimize losses to torpedo bombers and initially sent only the dive bombers to attack and cripple US carriers for the subsequent torpedo strike, this proved unsuccessful, as the torpedo bombers did not launch until the battle was over.[12] The B5N served as the basis for a follow-on design, the B6N, which eventually replaced it in front-line service. The B5N continued to fly in secondary roles, such as training, target towing, and anti-submarine warfare. Some of the aircraft used for this latter purpose were equipped with early radars and magnetic anomaly detectors. B5Ns were also used as bombers during the unsuccessful defense of the Philippines in October 1944, suffering severe losses. Later in the war, they were used for *kamikaze* attacks. None of the 1,150 production B5Ns survived World War II intact. Only two partially-recovered B5Ns are known to exist, neither of them airworthy. Replicas of the B5N2s were made using stretched fuselages from U.S. Canadian Car and Foundry "Harvard" - a variant of the North American T-6 Texan trainers, which were modified to represent Japanese aircraft for the movie *Tora! Tora! Tora!*, and have been used in a number of movies and airshows since to depict the aircraft. One recovered B5N2 is at the Wings Museum in Balcombe, West Sussex, UK.[13] This large portion was recovered from the Kuril Islands by a British private collector in 2003. A B5N was unveiled at the Pacific Aviation Museum in Honolulu, Hawaii on 18 April 2016.[14]

Specifications (Nakajima B5N2)



Nakajima B5N1

General characteristics

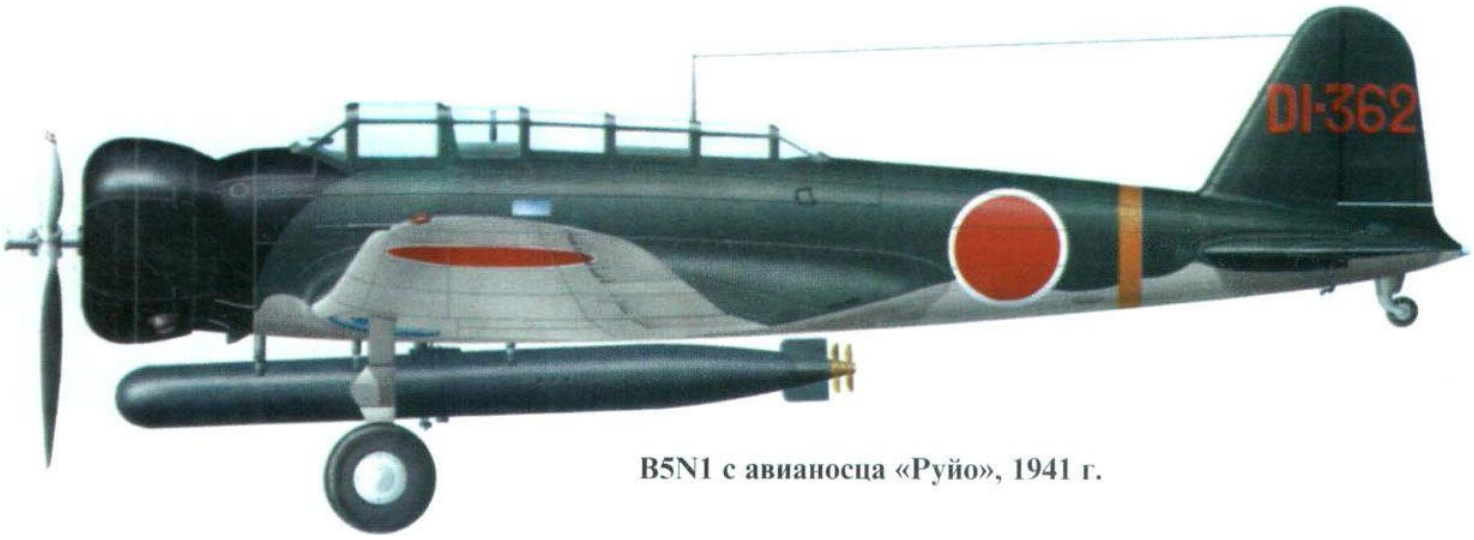
- **Crew:** 3
- **Length:** 10.3 m (33 ft 10 in)
- **Wingspan:** 15.518 m (50 ft 11 in)
- **Height:** 3.7 m (12 ft 2 in)
- **Wing area:** 37.7 m^2 (406 sq ft)
- **Airfoil: root:** NN-5 mod (16%); **tip:** NN-5 mod (8%)[16]
- **Empty weight:** 2,279 kg (5,024 lb)
- **Gross weight:** 3,800 kg (8,378 lb)
- **Max takeoff weight:** 4,100 kg (9,039 lb)
- **Powerplant:** 1 × Nakajima Sakae 11 14-cylinder air-cooled radial piston engine, 750 kW (1,000 hp) for take-off
  720 kW (970 hp) at 3,000 m (9,843 ft)
- **Propellers:** 3-bladed constant-speed metal propeller

Performance

- **Maximum speed:** 378 km/h (235 mph, 204 kn) at 3,600 m (11,811 ft)
- **Cruise speed:** 259 km/h (161 mph, 140 kn) at 3,000 m (9,843 ft)
- **Range:** 978 km (608 mi, 528 nmi)
- **Ferry range:** 1,991 km (1,237 mi, 1,075 nmi)
- **Service ceiling:** 8,260 m (27,100 ft)
- **Rate of climb:** 6.5 m/s (1,280 ft/min)
- **Time to altitude:** 3,000 m (9,843 ft) in 7 minutes 40 seconds
- **Wing loading:** 100.8 kg/m^2 (20.6 lb/sq ft)
- **Power/mass:** 0.196 kW/kg (0.119 hp/lb)

Armament

- **Guns:** 1 × 7.7 mm Type 92 machine gun 'Ru' (Lewis) in rear dorsal position, fed by hand loaded drum magazines of 97 rounds. A number of B5N1s were equipped with 2 × 7.7 Type 97 machine guns in the wings.
- **Bombs:** 1 × 800 kg (1,760 lb) Type 91 torpedo or 1 × 800 kg (1,760 lb) bomb or 2 × 250 kg (550 lb) bombs or 6 × 60 kg (132 lb) bombs[17]



B5N1 с авианосца «Руйо», 1941 г.

Source : https://en.wikipedia.org/wiki/Nakajima_B5N