

# DATA BASE

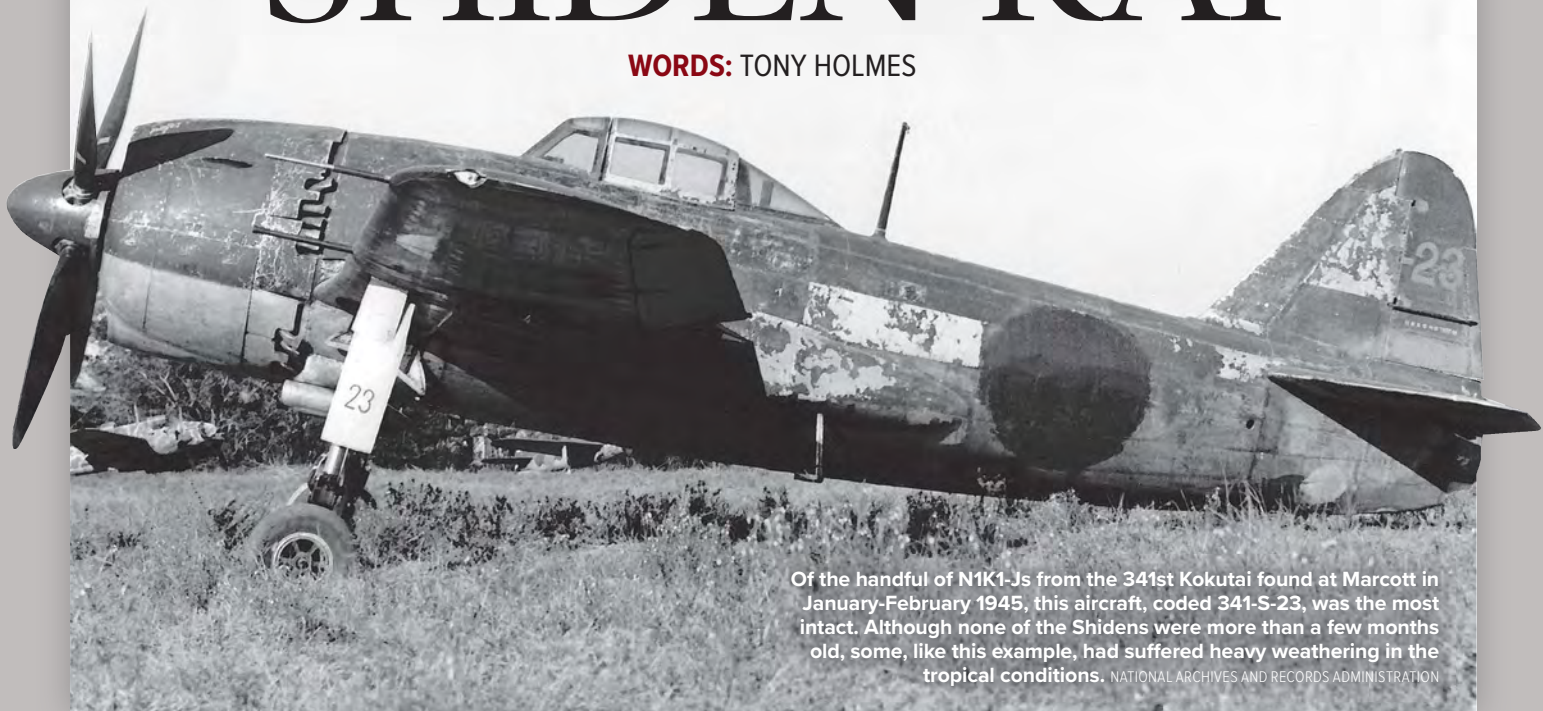
N1K2-Ja Shiden-Kai Model 21a  
'343-A-11' of CPO Shoichi Sugita from  
the Sento Hikotai, 301st/343rd Kokutai,  
at Matsuyama in March 1945. JIM LAURIER



**15**  
IN-DEPTH  
PAGES

# KAWANISHI N1K1 SHIDEN AND N1K2 SHIDEN-KAI

WORDS: TONY HOLMES



Of the handful of N1K1-Js from the 341st Kokutai found at Marcott in January-February 1945, this aircraft, coded 341-S-23, was the most intact. Although none of the Shidens were more than a few months old, some, like this example, had suffered heavy weathering in the tropical conditions. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

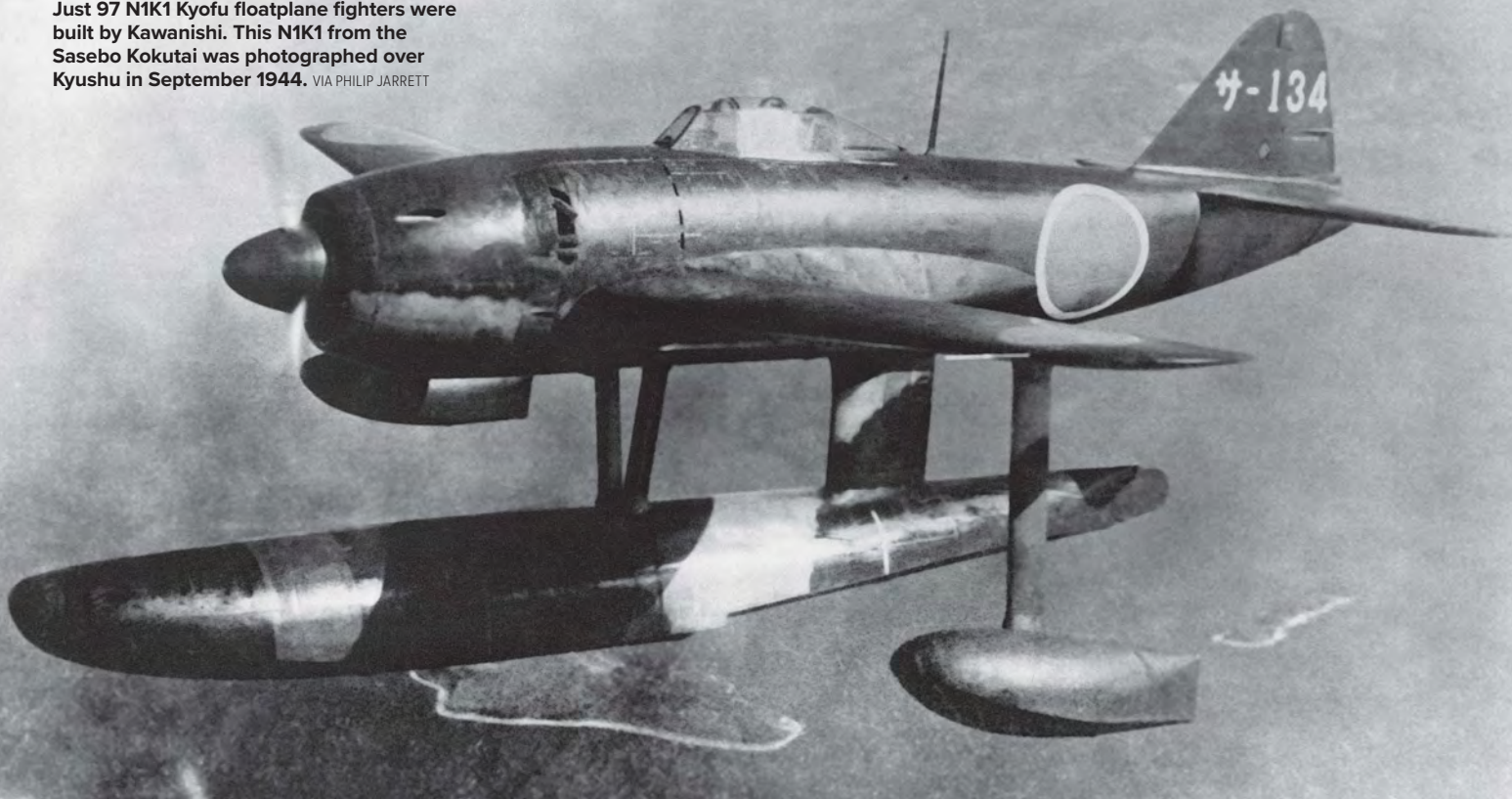
Development

Technical Details

In Service

Insights

Just 97 N1K1 Kyofu floatplane fighters were built by Kawanishi. This N1K1 from the Sasebo Kokutai was photographed over Kyushu in September 1944. VIA PHILIP JARRETT



In June 1944 the Imperial Japanese Naval Air Force (IJNAF) decided that the myriad problems afflicting the Mitsubishi J2M Raiden, developed as a replacement for the venerable A6M Zero-sen, were never going to be solved, thus allowing the aircraft to fulfil the 14-Shi specification issued to the company in 1939. It had called for the development of a fighter that was capable of achieving a maximum speed of 373mph at 19,685ft, the ability to attain this altitude within five-and-a-half minutes of take-off and endurance of 45 minutes at full power. The aircraft was to have a take-off run at overloaded weight in nil-wind conditions not exceeding 985ft, and a landing speed no greater than 81mph. Armament would consist of two 20mm cannon and two 7.7mm machine guns, as fitted in the A6M2 Zero-sen, and, for the first time, armour protection was requested for the pilot in the form of plating behind the seat.

With the Raiden ('Thunderbolt') being clearly all but a lost cause by the early summer of 1944, it was

fortunate for the IJNAF that a new interceptor which was both faster and more reliable was on the cusp of entering front-line service. The Kawanishi N1K2-J Shiden-Kai ('Violet Lightning Modified') would ultimately prove effective as an interceptor, although, as with the Raiden, it suffered from poor mechanical reliability and paucity in numbers.

Unlike Mitsubishi, Nakajima and Kawasaki, Kawanishi had very little experience in building

amphibious landings in areas where there was no adjacent airfield for land-based fighters. While Nakajima undertook the development of an interim aircraft (the A6M2-N, derived from the Zero-sen), Kawanishi was instructed to design an all-new aeroplane. The 15-Shi specification covering it was issued by the IJNAF in September 1940, and work commenced immediately at Kawanishi.

Designated as the K-20 under the Service Aeroplane

made its maiden flight on 6 May 1942. Teething troubles with the gearbox for the contra-rotating propellers saw the MK4D Kasei Model 14 engine replaced with a 1,530hp MK4C Kasei Model 13 driving a conventional three-bladed propeller via an extension shaft. The Kasei Model 13-powered second prototype was delivered shortly thereafter, and although the new engine/propeller combination was more reliable, the powerful on-water torque generated on take-off meant only the most skilled of pilots could fly the Kyofu.

Nevertheless, service trials aircraft were handed over to the IJNAF from August 1942, the fighter being rated as extremely pleasant to fly. Pilots were particularly impressed by the Kyofu's outstanding manoeuvrability thanks to its combat flaps. The N1K1 was armed with two wing-mounted 20mm cannon and two fuselage-mounted 7.7mm machine guns.

The Kyofu was ordered into quantity production in the autumn of 1942 and deliveries began in the spring of 1943. However, production was slow in gaining momentum. In December 1943, when the

### “Pilots were impressed by the Kyofu's manoeuvrability thanks to its combat flaps”

fighters, specialising instead in large, long-range flying boats. In an ironic twist of fate, Kawanishi's affinity with water-borne aircraft eventually led it to produce one of the finest land-based piston-engined fighters of the war.

Both the Shiden and its lineal descendent, the Shiden-Kai, owed their existence to the N1K1 Kyofu ('Mighty Wind') floatplane fighter. The development of the latter was prompted by an IJNAF request in 1940 for a floatplane fighter to support Japanese

Development Programme system and the N1K1 Kyofu by Kawanishi, the comparatively heavy mid-wing, all-metal monoplane had a single central float attached to the fuselage by a V-strut forward and an I-strut at the rear. Retractable stabilising floats near the wingtips were proposed, but soon replaced by fixed cantilever floats.

Following its completion at Kawanishi's Naruo plant near Osaka, the first of eight prototype/service trials N1K1s

delivery rate had reached 15 aircraft per month, the IJNAF took the decision to cease manufacturing the N1K1. The last of just 97 Kyofus, including eight prototypes and service trials aircraft, was delivered in March 1944. The halting of production in favour of the land-based N1K1-J Shiden reflected the fact that Japan no longer had the upper hand in the Pacific War, hence the IJNAF had no need for a fighter designed to support offensive operations. A land-based interceptor capable of defending the home islands from impending attack was now the priority, and Kawanishi believed it had just the fighter for the job.

In December 1941, while detailed design work was still being carried out on the N1K1, the Kawanishi engineering team briefed the company's management on a land-based derivative of the Kyofu. Its projected performance was enough to convince Kawanishi to develop the machine privately. By year-end it had submitted a proposal for the fighter to IJNAF headquarters, and its technical director for aircraft, Vice Admiral Rikizo Tada, was so impressed by what he saw that he gave the design his personal blessing.

Although no official specifications were subsequently issued, Kawanishi believed that it built a fighter better than those either in service or already under development, the IJNAF would buy it. The company appointed Shizuo Kikuhara to head the engineering team, while the IJNAF assigned Engineering Cdr Junjiro Suzuki to offer guidance.

Initially, with the exception of the replacement of the ventral and outrigger floats by a fully retractable, wheeled undercarriage, few modifications to the Kyofu were planned. However, it was soon decided to exchange the 14-cylinder MK4C Kasei 13 engine for a new 18-cylinder Nakajima NK9B Homare ('Honour') 11 radial, expected to produce more than 1,800hp.

To take full advantage of all this power, a four-bladed VDM metal propeller with a diameter of almost 11ft was selected. This, combined with the location of the wings at mid-fuselage,



The prototype N1K2-J completed its first flight from the newly constructed Naruo airfield on 31 December 1943, with Kawanishi test pilot Munekichi Okayasu at the controls. Production aircraft differed very little from this machine, only the cowling and exhaust stubs being altered. The first 100 N1K2-Js also had the larger tail, as here. VIA PHILIP JARRETT

dictated that Kawanishi equip the fighter with lengthy and complex undercarriage legs that contracted as they retracted into the wing wells — for landings, the process was reversed. Modifications were made to the combat flap system, which was changed from manual control in the Kyofu to automatic extension/retraction in the land-based fighter.

Despite the landing gear presenting problems to the design team, construction of the prototype progressed rapidly at the Naruo plant. Designated as the X-1 (Experimental Interceptor No 1) by Kawanishi and, eventually, the N1K1-J Shiden by the IJNAF, the prototype, with Air Arsenal pilot Lt Takumi Hoashi at the controls, made its first flight from Itami on 31 December 1942.

The Shiden was afflicted by numerous problems during its flight trials programme. The Homare engine failed to produce the hoped-for power, reducing the prototype's top speed to 357mph. The fighter's calculated maximum had been estimated at 403mph, but the performance of the radial engine was compromised by poor fuel quality and unreliable carburetors. Hoashi complained about limited visibility from the cockpit during taxiing due to the excessive length of the undercarriage, which quickly proved too fragile for use on unpaved runways. Finally, the fighter suffered from excessive propeller torque on take-off.

However, once in the air, it was a revelation thanks to the combat flap system inherited from the Kyofu. A Japanese innovation,

it was unique to Kawanishi's late-war fighters. When flying a Zero-sen in aerial combat, the pilot had to engage the aircraft's flaps manually. If he banked sharply left to instigate a turn without correctly engaging the flaps, the aircraft would instead bank violently to the right. This was because the right wing had stalled due to the greatly increased angle of incidence associated with the turn.

The Shiden's combat flaps lowered automatically at a steady rate when the fighter started to manoeuvre, enabling the pilot to make a sharp turn without having to exert a heavy force on the control column, endure high g-forces or cause the N1K1 to stall. On 5 June 1943, a mock dogfight between the original Shiden prototype, which lacked the flaps, and a newly built aircraft with them installed saw the latter dominate the engagement.

Nevertheless, IJNAF personnel remained unhappy with the Shiden, principally because it had been developed privately by Kawanishi without their direct input. Yet even with the reduced engine performance, the N1K1 was faster than the A6M5 that equipped front-line units and the J2M2, on the cusp of operational service. It also had greater range and was more agile than the Raiden. With Corsairs and Hellcats now appearing in the Pacific theatre, the IJNAF knew it had to stick with the Shiden. ➤



Designated as the X-1 (Experimental Interceptor No 1) by Kawanishi and, eventually, the N1K1-J Shiden by the IJNAF, the prototype — with Air Arsenal pilot Lt Takumi Hoashi at the controls — made its first flight from Itami on 31 December 1942. NASM

**DATAFILE** // **IMPROVED SHIDEN-KAI**

Only two examples of the N1K3-J Shiden-Kai 1 Model 31 were built, the aircraft having its Homare 21 moved forward 6in to overcome the centre of gravity problems that had afflicted the N1K2 — it was too far back in the Model 21. This fuselage extension provided adequate

space for two 13.2mm Type 3 machine guns in place of the ineffectual 7.7mm weapons. Although the Model 21 was supposed to be replaced by the Model 31 from early February 1945, the improved Shiden-Kai was never put into series production.



The aircraft was improved by Kawanishi with the help of IJNAF engineers and technicians, being fitted with the more reliable 1,990hp NK9H Homare 21 enclosed in a modified cowling that featured an additional lower lip scoop, individual exhaust stacks and an external oil cooler on the left-hand side of the cowling. The Shiden's armament was increased, two additional 20mm Type 99 Model 2 cannon being installed in the wings outboard of the gondola-housed 20mm weapons originally fitted to the prototype N1K1. Both variants retained the fuselage-mounted 7.7mm Type 97 machine guns.

By the end of 1943, 70 N1K1-Js had been built by Kawanishi's Naruo plant and the first example had rolled off the line at Himeji. Ultimately, 539 Shidens (prototypes and production aircraft) would be completed at Naruo and 468 at Himeji. Despite suffering ongoing engine reliability and undercarriage problems stemming from low-grade fuel, poor machine tooling and inferior-quality materials, they began to reach the front line in early 1944.

Just four days after the first flight of the N1K1-J in X-1 prototype form, Kawanishi's

design team started work on an advanced version. The Shiden was subsequently seen as a stopgap fighter, pending availability of the N1K2-J. Keen to eliminate the need for the long, complex and troublesome undercarriage of the Shiden, and hoping to simplify construction and maintenance, Kawanishi moved the wings to the lower fuselage, adopted conventional landing gear and entirely

redesigned the fuselage and tail surfaces. The end result was a virtually new aircraft that retained only the wings and cannon armament of the N1K1-J (all four 20mm weapons were now installed *within* the wings, however).

The prototype N1K2-J completed its first flight from the newly constructed Naruo airfield on 31 December 1943, with Kawanishi test pilot Munekichi Okayasu at the controls. A week later Air Arsenal pilot Lt Yoshio Shiga took the aeroplane aloft for the first time. "It was a test flight under limited conditions," he said. "There were still problems with the engine and propeller.

At an altitude of 3,000m [9,840ft] there was no problem with stability in either direction, even when the landing gear and flaps were down. Stall came abruptly — this was different from the Zero-sen fighter. Visibility was OK. There was no problem with the tailplanes or rudder. The Shiden-Kai was totally different to fly than the Shiden. I signalled to observers on the ground that the aircraft was fine to fly by

carrying out a shallow dive towards the runway and then making a short-turn landing after pulling up at low altitude."

Although the Shiden-Kai could prove to be a handful near the stall — pilots were told to be sensitive with the flight controls, as rough handling could lead to an autorotation spin that was hard to recover from — it was an excellent heavy interceptor, considerably better than the light Zero-sen. The performance of the Homare engine continued to be lower than expected, however, principally because the IJNAF was forced to use fuel with a quality rating reduced

to 85 octane due to it being mixed with oil extracted from pine tree roots — this proved highly volatile. Nevertheless, even under these conditions, pilots on the front line would claim that the Shiden-Kai's performance was good up to around 30,000ft.

Manufacturer's trials of the N1K2-J were completed in just 15 weeks, allowing the type to be handed over to the IJNAF in April 1944. The latter demonstrated its confidence in the Shiden-Kai by authorising the start of quantity production before completion of service trials. By June of that year seven additional prototypes had been built, and production aircraft, designated as the Navy Interceptor Fighter Shiden-Kai Model 21, began rolling off the assembly lines at Naruo. Although six other plants were also ordered to build N1K2-Js, production fell considerably behind schedule as B-29 Superfortress raids on key sites led to a shortage of both engines and airframes. Ultimately, by VJ-Day, just 351 N1K2-Js had been completed by the Naruo factory and 42 by Himeji, as well as 22 more airframes at five other sites. It had been hoped to have 2,000 in service by the summer of 1945.

**“Pilots on the front line would claim that the Shiden-Kai's performance was good up to 30,000ft”**

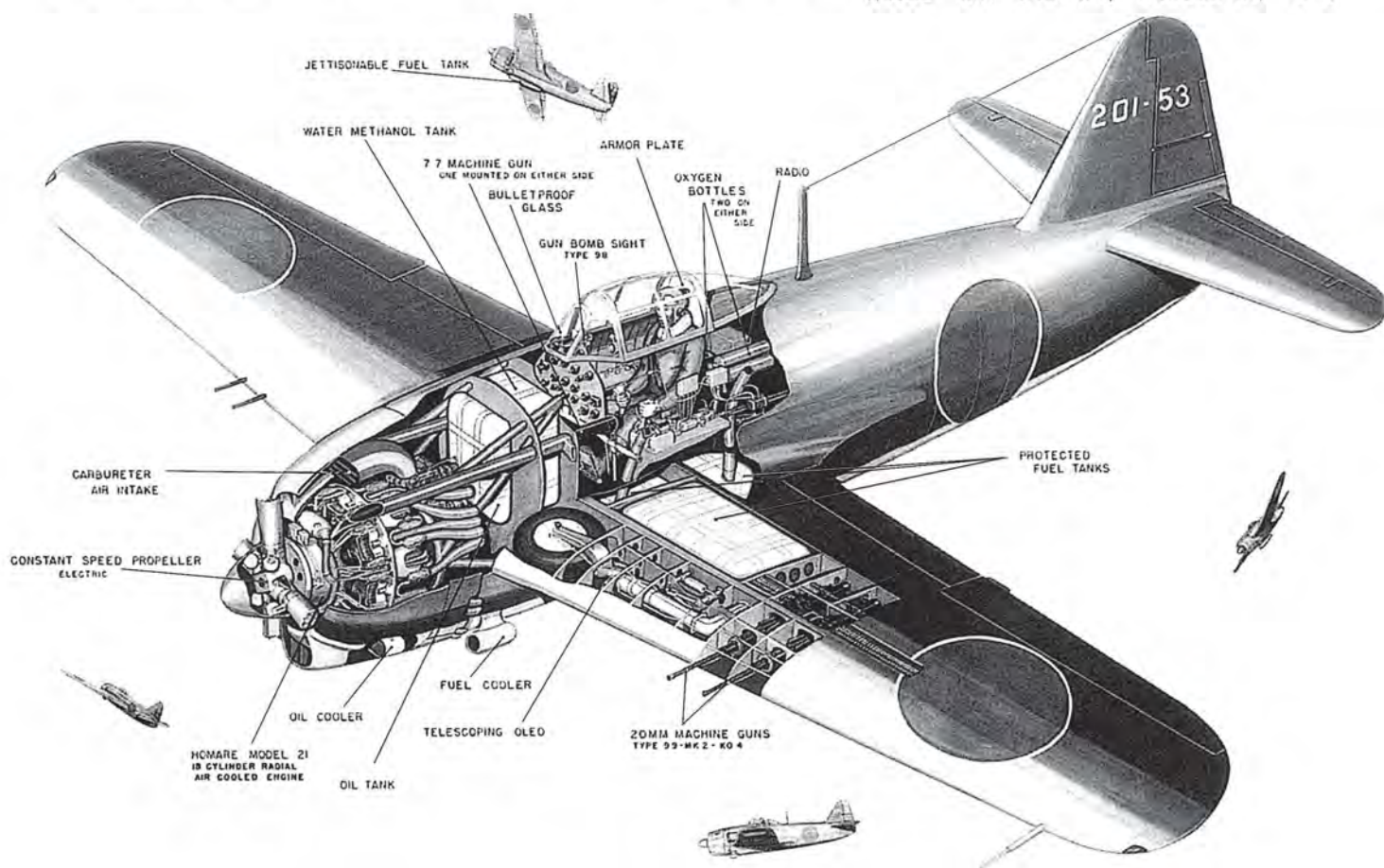
## GEORGE 11

TECHNICAL

(MODIFIED) - NAVAL LAND BASED FIGHTER - SPAN 39'-4½" LENGTH 29'-6½"

AIR INTELLIGENCE CENTER

NAVAL AIR STATION, ANACOSTIA, D. C.



Following a thorough examination of photographs taken of N1K1-Js found at Marcott in early 1945, Technical Air Intelligence Command (TAIC) artist SSgt R. B. Aldrich created this cutaway drawing of the 'George 11' in March 1945. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

The US Navy Division of Naval Intelligence's *Technical Air Intelligence Center Summary No 33*, from July 1945, contained an explanation of the N1K1/2's structure. It outlined how the fuselage was of semi-monocoque construction, and its skin material was aluminium. The cockpit canopy was "high and narrow, with good all-round vision. Cockpit layout is generally good. Instruments are well grouped and all cranks and handles are readily available and easy to operate, with the exception of the landing gear and wing flap controls". The "quite deep" aft portion of the fuselage gave the 'George', the N1K1/2's Allied reporting name, "an unusual and distinctive appearance in side aspect".

The wing had "tapered leading and trailing edges terminating in

rounded tips. Center portion of wing is integral with the fuselage, and an outer panel is attached to the center section. Two-spar construction, with one spar full span, while the other extends only to the outer panel.

"Flaps are Fowler type, hydraulically actuated, with an angular travel of 30°. There are two hydraulic cylinders per flap.

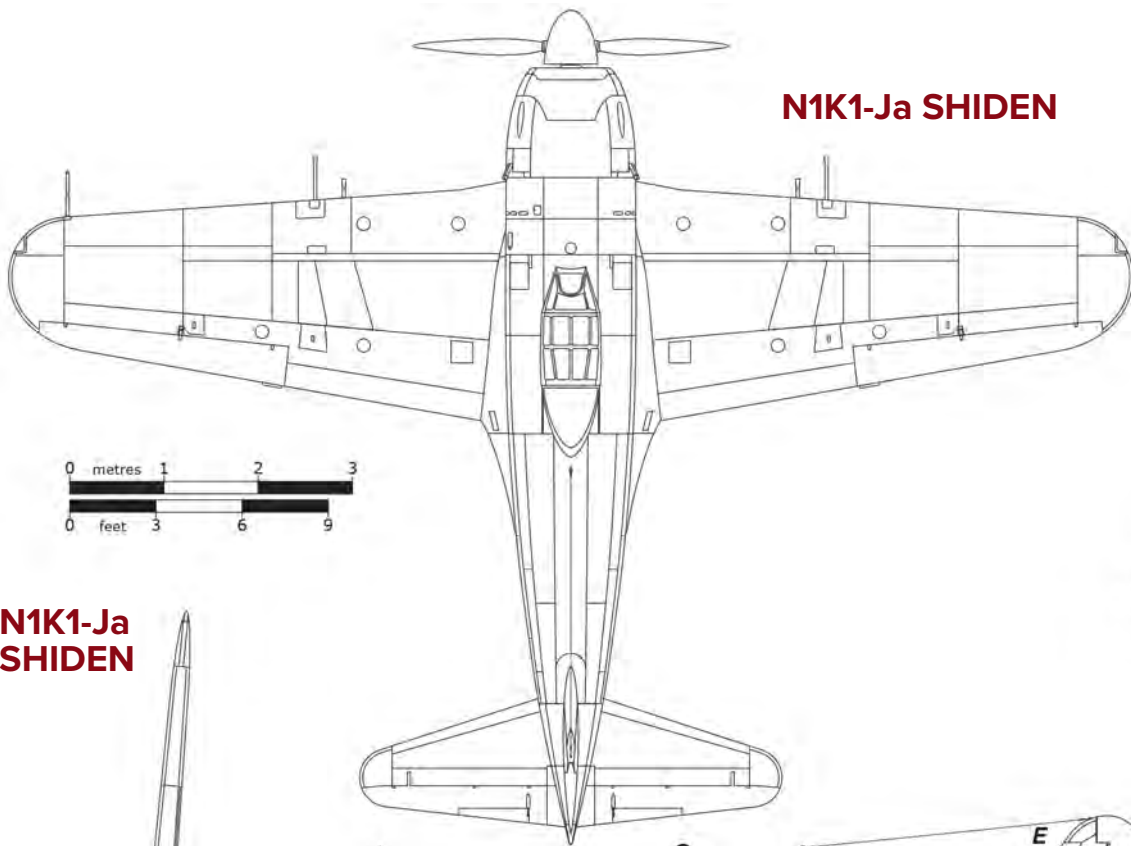
An automatic maneuver flap was installed in the original model which functions at low speed, and in addition changed the fulcrum arm on ailerons, rudder and elevators so as to get more control at low speeds, while still maintaining light control forces at high speeds. Production airplanes eliminated the automatic flap and the aileron

fulcrum change, but kept the increased rudder and elevator with flaps down. Operation of the flaps is complicated in that the flap handle must be returned to neutral in order to have brake pressure, and also two handles are required to retract flaps. Flap handle must be in the up position and an additional flap dump valve must be pulled in order to retract flaps... Dive brakes of panel design were found but were bolted closed.

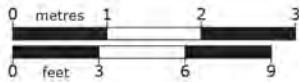
"The fin and rudder have an equal taper fore and aft and with a rounded tip. The vertical stabilizer is of [...] aluminium, all-metal and flush-riveted. The rudder is of fabric and metal, with a cockpit-controllable trim tab.

"The horizontal stabilizer and elevators present an appearance of greater taper on the leading edge, lesser trailing edge taper, and rounded tips." ➤

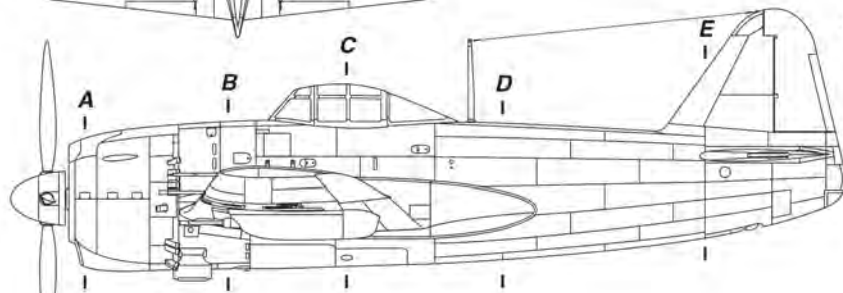
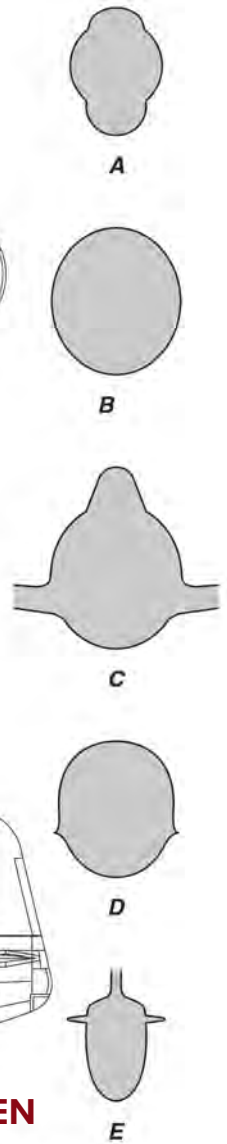
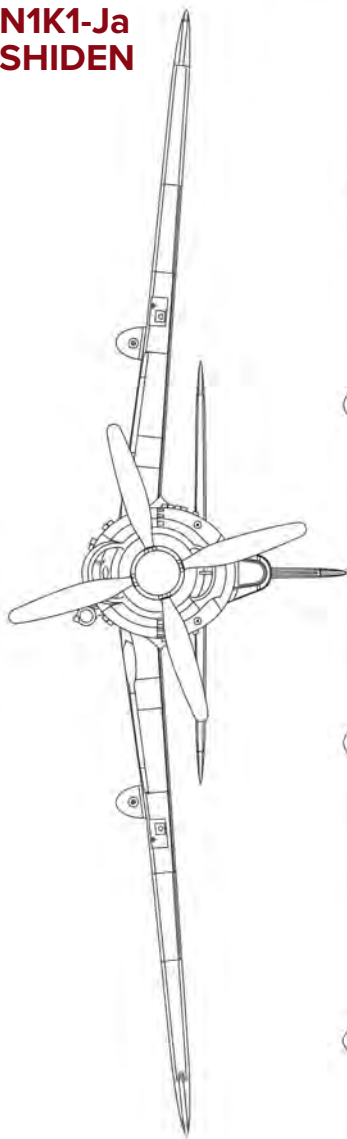
SPECIFICATIONS: N1K2-J SHIDEN-KAI	
<b>POWERPLANT</b>	One Nakajima NK9H Homare 21, 1,990hp
<b>DIMENSIONS</b>	Length: 30ft 8in (9.35m) Wingspan: 39ft 4.5in (12.00m) Height: 13ft 0in (3.96m)
<b>WEIGHTS</b>	Empty: 5,858lb (2,657kg) Maximum take-off: 10,714lb (4860kg)
<b>PERFORMANCE</b>	Maximum speed: 369mph (594km/h) Range: 1,488 miles (2,395km) with external tanks
<b>ARMAMENT</b>	Four 20mm cannon in wings; four 55lb (250kg) bombs on underwing Type 97 Ko racks



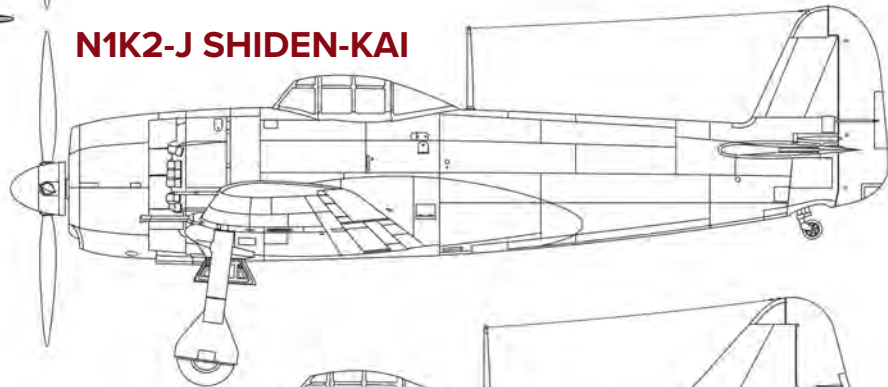
**N1K1-Ja SHIDEN**



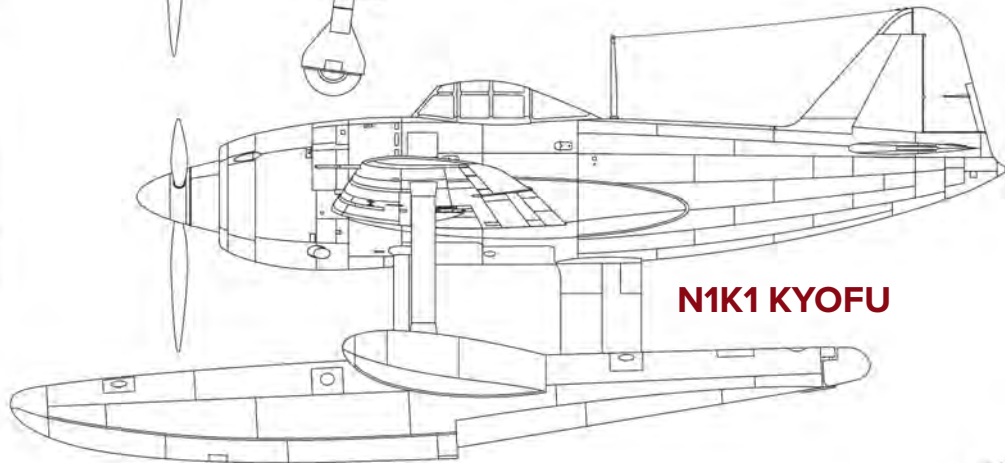
**N1K1-Ja SHIDEN**



**N1K1-Ja SHIDEN**



**N1K2-J SHIDEN-KAI**



**N1K1 KYOFU**

Two N1K1-Ja Model 11As have their NK9B Homare engines warmed up at Genzan airfield in Korea prior to a training flight in early 1945. The nearest Shiden has a Katakana 'G' as part of its tail code, denoting its assignment to the Genzan Kokutai, one of the IJNAF's principal fighter training units. VIA YASUHO IZAWA



The first front-line unit to receive the N1K1-J Shiden was the 341st Kokutai (air group, consisting of between three and six hikotai), specifically formed at Matsuyama, in Ehime prefecture on the island of Shikoku, on 15 November 1943 to fly the aircraft. The 341st had to make do with A6Ms until the first Shidens reached the unit in mid-February 1944. By then it was flying from Tateyama, in Chiba prefecture. Ongoing serviceability issues and the lack of aircraft in general meant the 341st only started training with the N1K1-J in June.

By 10 July the unit had sufficient Shidens on strength to create the Sento 401st Hikotai (squadron) and Sento 402nd Hikotai, each supposed to have 48 fighters. The Sento 701st Hikotai within the Yokosuka Kokutai was also formed on the 10th, this nomadic Shiden-equipped unit later becoming part of the 341st Kokutai and, eventually, the 343rd following re-equipment with Shiden-Kais.

The 341st sent 17 N1K1-Js from Sento 401st Hikotai to Takao on 31 August in an effort to bolster Formosa's meagre aerial defences. This force had been boosted to 32 by mid-September, with Sento 402nd Hikotai receiving 30 Shidens at Miyazaki. The Takao-based N1K1-Js were supposed to defend Formosa from attack by US Army Air Forces aircraft flying

from the Chinese mainland, but poor serviceability meant none were intercepted. Ironically, the Shiden would make its combat debut against carrier-based fighters of the US Navy when, on 12 October, F6F Hellcats from the Third Fleet's Task Force (TF) 38 attacked targets on Formosa in a series of strikes that lasted 10 days. Their aim was to prevent Japanese aircraft on the island from participating in the Battle of Leyte Gulf, scheduled to begin later that month.



PO1c Takeo Yamada of the Sento 401st Hikotai claimed four F6Fs destroyed when the Shiden made its combat debut during the defence of Formosa on 12 October 1944. Posted to the 343rd Kokutai's Sento 701st Hikotai in early 1945, Yamada was killed while dogfighting with USAAF P-47Ns on 28 May 1945. VIA YASUHO IZAWA

Initially, Zero-sens saw all of the action, the Shidens being kept in reserve until seven were led on patrol by Sento 401st Hikotai commander Lt Masaaki Asakawa. Encountering a force of 60 aircraft as they approached Takeo, two of the Shiden pilots used their height advantage to claim eight F6Fs destroyed between them. Four were credited to PO1c Takeo Yamada, who eventually managed to extricate himself from the action and return to base. PO1c Hideo

Hirakawa was not so fortunate, ramming a Hellcat after he had exhausted his ammunition downing three other F6Fs. Hirakawa, who subsequently became the only Shiden ace, was saved by his parachute. A further 14 N1K1-Js had been scrambled when Asakawa's formation engaged the Hellcats, and pilots from the second group claimed a further two aircraft destroyed. The 10 victories credited to Sento 401st Hikotai came at a high price, 14 Shidens being lost.

Just eight N1K1-Js remained serviceable on Formosa after this initial action, although Shiden ranks had doubled by the time Sento 401st Hikotai sorted all of its available aircraft on 14 October as escorts for torpedo and dive-bombers sent to attack TF 38. They enjoyed little success, six aircraft (including a Shiden) being shot down by F6Fs. Five Hellcats were claimed in return. The following day N1K1-J numbers on Formosa were boosted by the arrival of Sento 402nd Hikotai and Sento 701st Hikotai.

US forces landed on Leyte Island on 20 October to signal the start of the retaking of the Philippines. Two days later, 40 Shidens from the 341st Kokutai and Sento 701st Hikotai flew in to Marcott, part of the Clark Field complex, on Luzon. Only 21 were serviceable when the 2nd Air Fleet launched 300 aircraft in a strike on the Pacific Fleet's Fast Carrier



**Shiden-Kais, headed by '343-A-15', of Sento 301st Hikotai at Matsuyama airfield on 10 April 1945 just before the unit departed for its new base at Kanoya. Unit CO Lt Naoshi Kanno had this aircraft specially marked up with command stripes in the hope that they would attract the attention of enemy aeroplanes. VIA YASUHO IZAWA**

Task Force during the Battle of Leyte Gulf on 24 October. The IJNAF suffered heavy losses in the unsuccessful operation, 11 Shidens being among the 60 aircraft destroyed.

On 28 October six Shidens were part of a 19-strong escort for 24 bomb-laden Zero-sens sent to attack US forces on Tacloban, the Kawanishi pilots fighting off 10 F6Fs and claiming one destroyed, one probable and a strafing victory without loss. US Navy carrier aircraft struck targets on Luzon the following day, and 11 Shidens were scrambled to intercept the first wave. Six F6Fs and two SBDs were claimed to have been shot down for the loss of six N1K1-Js. Eight aircraft from the second wave were credited to Shiden and Zero-sen pilots who doggedly defended Marcott airfield from attack.

There were 25 N1K1-Js at Marcott by the end of October,

of which 15 were serviceable. This figure took a hit six days later when carrier-based aircraft again targeted Luzon in three waves. Shiden pilots were credited with 10 F6Fs, two SBDs and two unidentified aircraft destroyed, though seven N1K1-Js were lost.

Three more F6Fs fell to the Shidens' guns on 13 November, but six Kawanishi fighters were in turn shot down and six more destroyed on the ground. By this time

Sento 701st Hikotai had been transferred to the 341st Kokutai. One of its more successful pilots from this particularly trying period was ace Ensign Akio Matsuba, who claimed four Hellcats destroyed off Taiwan and over the Philippines.

Outnumbered whenever it ventured into the air and hamstrung by the continued unserviceability of its dwindling number of Shidens, the 341st was also forced to 'volunteer' six pilots for Tokko Special Attack Units mounting kamikaze missions against naval vessels off Leyte. The kokutai moved

to Mabalacat shortly thereafter, its trio of sento hikotai now being led in the air by ace Lt Iyozo Fujita. In December at least seven

Shiden pilots were killed during interceptions overhead Luzon, including PO1c Hideo Hirakawa on the 23rd. Attacking USAAF bombers over Manila, he perished when his N1K1-J collided with his target. This final victory took Hirakawa's tally to

**“ Shidens were used in ever-diminishing numbers by a handful of units in the defence of the home islands ”**

five, making him the only known Shiden ace.

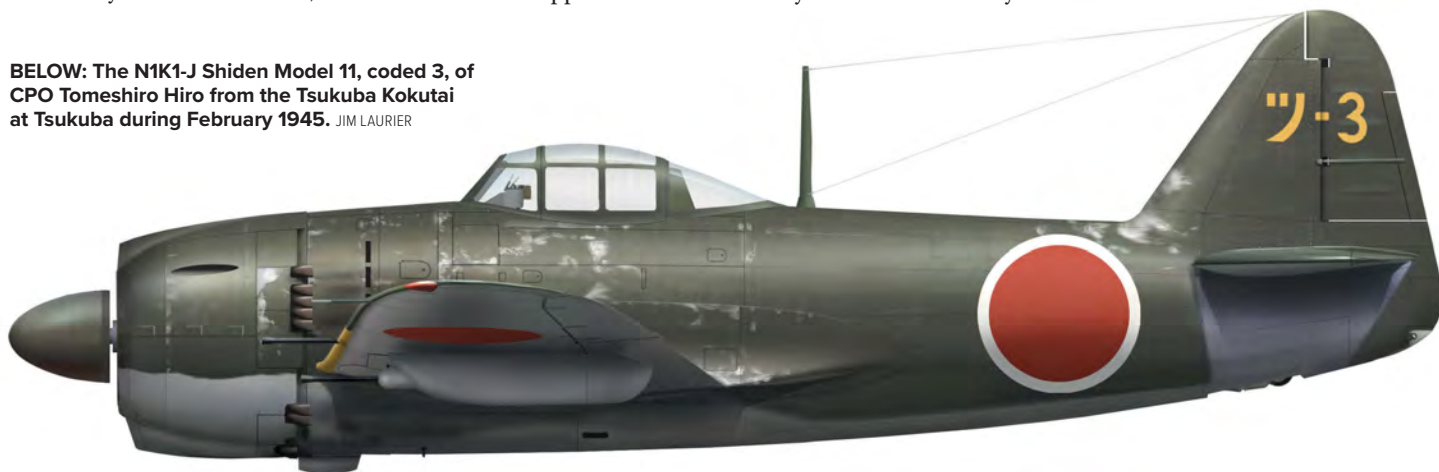
From mid-December the few surviving N1K1-Js were increasingly used as fast reconnaissance aircraft. Indeed, future 343rd Kokutai pilot Lt Takuo Mitsumoto frequently spotted US Navy carriers sailing off Luzon. The final four airworthy N1K1-Js were flown to Tuguegarao, in Cagayan province, on 9 January 1945, and they too were soon lost attacking shipping in the Lingayen Gulf. Although the 341st Kokutai's surviving Shiden pilots were flown back to Formosa in IJNAF and JAAF transports, the unit's groundcrew were left in Luzon to fight on to the death.

From 24 October 1944 to 10 January 1945, Shidens had flown 303 sorties (compared to 1,049 by A6Ms) in the Philippines. Between them, Shiden and Zero-sen pilots had claimed 120 American aircraft shot down and 60 destroyed on the ground. The vast majority of these had fallen to aviators flying A6Ms.

### Homeland defence

The IJNAF received a further 112 Shidens during 1945, and they would be used in ever-diminishing numbers by a handful of units in the ill-fated defence of the home islands. The first to see action over Japan was the 210th Kokutai, formed at Meiji, near Nagoya, as a composite training unit equipped with different types of aircraft. Flying no fewer than 31 Shidens, the buntai (equivalent to a hikotai but with a command element) assigned these fighters was primarily involved in

**BELOW: The N1K1-J Shiden Model 11, coded 3, of CPO Tomeshiro Hiro from the Tsukuba Kokutai at Tsukuba during February 1945. JIM LAURIER**







Sento 301st Hikotai pilots pose for a formal photograph at Matsuyama in January 1945, with the 343rd Kokutai's commanding officer, Capt Minoru Genda, and executive officer, Lt Cdr Yoshio Shiga, seated fourth and fifth from the left in the front row. All squadrons within the 343rd were composed of approximately 40 pilots. VIA YASUHO IZAWA

intercepting B-29s when they started attacking targets in Japan.

Another training unit, the Tsukuba Kokutai, was also equipped with a small number of Shidens in early 1945, and these clashed with US Navy aircraft attacking the Kanto Plain in February. The first such engagement occurred on the 16th when mixed formations of Zero-sens and Shidens fought Hellcats on three separate occasions. One F6F was claimed as destroyed and three damaged. A single Shiden and five Zero-sens were lost in return. A handful of N1K2-Js were involved in the fighting over the Kanto Plain that day, the Shiden-Kai making its combat debut in the hands of aces serving with the Air Arsenal and the Yokosuka Kokutai. Ensign Matsuo Hagiri from the latter unit became the first pilot credited with a victory in the new fighter. An engineer by trade, Hagiri was highly valued within the unit for his analytical mind and immense physical strength — he

once endured 9.5g in a test dive without blacking out.

During the late morning of 16 February, the Air Arsenal and Yokosuka Kokutai scrambled a mixed formation of at least 10 fighters — A6Ms, J2Ms and N1K2-Js — from Oppama. Among the Shiden-Kai pilots were Lt Shigehisa Yamamoto, the type's chief test pilot at the Air Arsenal, and 17-victory ace CPO Masao Masuyama. Veteran aviator PO1c Shin-ichi Hirabayashi was in another Shiden-Kai, flying as wingman for Ensign Matsuo Hagiri. The pilots circled over Atsugi waiting for the low-flying carrier aircraft to appear from the south-east. Once they had spotted their foes, they employed 'dive and zoom' tactics developed by the Yokosuka Kokutai. Hagiri claimed an F6F destroyed for his 13th, and last, success.

“ Ensign Kaneyoshi Mutoh single-handedly engaged 12 F6F Hellcats, probably from VF-82, over Atsugi ”

Fellow Yokosuka Kokutai Shiden-Kai pilot, and 23-victory ace, Ensign Kaneyoshi Mutoh scrambled after the main formation, although he quickly made up for lost time. He single-handedly engaged 12 F6Fs over Atsugi — these aircraft were probably from VF-82, embarked in USS *Bennington* (CV-20),

which lost six Hellcats in combat over Honshu on this date. Mutoh claimed to have destroyed four aircraft with only short bursts

of fire, his success being widely reported in the Japanese press. It was compared to the actions of Musashi Miyamoto, a famed swordsman of the early 17th century, at the Battle of Sagari-matsu.

Overall, the pilots from the Air Arsenal and the Yokosuka Kokutai claimed 13 enemy aircraft destroyed and six

probably shot down on 16 February for the loss of CPO Mitsugu Yamazaki, who bailed out of his fighter and landed safely.

### Combat for the 343rd Kokutai

The principal recipient of the Shiden-Kai was the 343rd Kokutai, formed specifically to fly the N1K2-J. It was created as a direct result of a new strategy proposed by Capt Minoru Genda, the mastermind behind the attack on Pearl Harbor on 7 December 1941. A brilliant strategist, a combat veteran with both land- and carrier-based units, and a former naval air attaché, Genda was serving with the IJN general staff in 1944 when he became increasingly alarmed at the ineffectiveness of naval fighter units in their attempts to defend IJN vessels battling the US Navy in the south-west and central Pacific.

Following the IJN's heavy defeat at the Battle of Leyte

Gulf in late October 1944, when it lost 26 warships (including four aircraft carriers and three battleships) and more than 300 aircraft, Genda proposed a new strategy to naval GHQ. Explaining that Japan was losing the war because the enemy had control of the skies, he tabled a radical idea that saw the creation of an elite unit commanded by Genda, led by veteran squadron leaders and equipped with the IJNAF's newest fighter, the Shiden-Kai. His aim was to regain air superiority and try to turn the tide of war. Genda was given approval.

Established on 25 December 1944, the 343rd Kokutai was attached to the 3rd Air Fleet on 10 February 1945. Genda had become its CO on 15 January, the 343rd calling Matsuyama, on the island of Shikoku, home. The Sento 301st Hikotai would be the first unit assigned to the 343rd Kokutai, followed by Sento 407th Hikotai, Sento 701st Hikotai and Sento 401st Hikotai, which functioned as a training unit.

The 343rd was primarily staffed by veteran pilots hand-picked by Genda and his immediate subordinates. The group was still in the process of converting from the Shiden to the Shiden-Kai when it was forced into combat for the first time over the Inland Sea on 19 March, opposing US Navy aircraft from TF 58 that had been sent to bomb Kure. The kokutai scrambled no fewer than 72 fighters, seven of them N1K1-Js.

Genda had drilled his pilots ceaselessly, emphasising formation tactics above everything else. He knew that the Shiden's inferior performance (slower rate of climb and top speed), lighter armament and shorter range compared to the Shiden-Kai meant the two could not undertake formation tactics together. Genda therefore decided that he would use eight N1K1-Js as cover flights for the Shiden-Kais. Sento 407th Hikotai and Sento 701st Hikotai were each to contribute four aircraft, led by Lts Goro Ichimura and Ryoichi Yamada respectively. The latter had volunteered to fly a Shiden because no-one else wanted to, and because he was familiar with the hard-to-control fighter following his service



**A Shiden-Kai from Sento 301st Hikotai makes an attacking pass at a wildly manoeuvring Martin PBM Mariner from VPB-21 north-west of Kyushu on 11 May 1945. Two US Navy flying boats were intercepted by four N1K2-Js, three of which were equipped with unguided aerial rockets. One of the Mariners was so badly damaged by an exploding rocket that its crew had to ditch.** US NAVY

with Sento 402nd Hikotai in the Philippines.

The 343rd knew TF 58 was coming, for US Navy aircraft had hit targets in Kyushu the previous day. On the morning of 18 March, the 16 carriers of TF 58 sailing off the southern coast of Kyushu had launched their attack. The vessels' presence came as no surprise to the IJNAF, as they had been

While US Navy pilots conducted their final pre-mission briefings and their aircraft — more than 300 — were prepared for a dawn launch on the 19th, Genda addressed all his pilots at Matsuyama at 05.00hrs: "The enemy's invasion is inevitable this morning. We are going to intercept the enemy aircraft and deal a severe blow to them. Our target is the enemy's

Although Ichimura and his three pilots got airborne without any problem as dawn drew near, the right undercarriage leg of Yamada's aircraft broke while taxiing. A common occurrence that plagued the Shiden throughout its short service life, Yamada abandoned his aircraft and requisitioned a fighter from the number three pilot in his formation.

Genda received word at 06.50 that TF 58 had been located, and that its carrier aircraft would have to pass almost directly over Matsuyama on their way to and from attacking Kure. He ordered his pilots to take off: 56 Shiden-Kais departed in seven line-abreast formations of eight aircraft one after another. The initial wave of US Navy aircraft, approaching Shikoku and Kyushu from two directions, was less than 80 miles away. All of the fighters committed by the 343rd were now airborne and climbing hard to get above the enemy formations. At least seven aces were aloft in N1K2-Js.

## “Genda knew the Shiden and Shiden-Kai could not undertake formation tactics together”

detected by Japanese radar and patrol aircraft. Tasked with knocking out airfields on Kyushu that could be used as staging areas for kamikaze units in advance of the amphibious assault on Okinawa, hundreds of US Navy aircraft strafed and bombed bases in a series of attacks that resulted in American pilots claiming 102 Japanese aeroplanes shot down and 275 destroyed on the ground.

fighter force. Do not give your eyes to bombers — ignore them. Try to shoot down as many of the enemy fighters as possible!”

At 06.30 Genda ordered seven Shiden pilots to take off and circle the airfield at 16,400ft. It would be their job to protect Matsuyama long enough for the 56 Shiden-Kais to get into the air safely. This would be the first — and last — day that the 343rd would fly the N1K1-J in combat.

Their airfield protection detail over, the Shiden pilots were ordered to follow their respective units into battle. Some 3,300ft above the climbing Shiden-Kais, Lts Yamada and Ichimura spotted the approaching Hellcats first. Slashing through 20 F6F-5s, the Sento 407th Hikotai shot down or disabled half of the formation.

Ichimura arrived on the scene moments later: "I hurried into battle, joining the combat. After that, I did not know what I was doing! The white star markings on one wing and the white lines on the other wing for identification persistently came into sight one after another. Each time we closed in, tracers from our four 20mm cannon crossed with those from the Americans' 13mm guns."

Yamada, whose division was behind and above Sento 701st Hikotai, providing it with top cover as the Shiden-Kais targeted the Hellcats, recalled, "I hurried to a position straight above the combat, which by now had turned into a melee. I watched and found Shiden-Kais hunting down the Grummans. As the zone of combat expanded, some of the Grummans were forced to get out of it. Once getting out of the zone, they could possibly regroup and come back with full advantage. I immediately knew that my duty was to hit such aircraft like swatting flies with a swatter, and began manoeuvring to attack a four-aircraft Grumman formation. I concentrated my energy and started my attack run, closing to within 330ft of the tail of one of the Grumman fighters. He had not noticed me yet. I got so near that I needed no gunsight, pressing the firing button on the throttle lever. Within half a second the Grumman had caught fire. I gave him another burst for a quarter of a second. His wing flew off. The stout-looking Grumman banked. The power of the 20mm cannon was great. It was a key to victory in formation fighting to prevent enemy attacks while another section engaged."

Enjoying a height advantage, and with the sun at their backs, the 343rd dived on formations of Hellcats. As they had been

taught, the Shiden-Kai pilots, led by Sento 701st Hikotai squadron leader Lt Takashi Oshibuchi, made two-aircraft section attacks from above, then recovered together and climbed back up to the rest of their formation in order to retain their height advantage, before attacking again. Within minutes the US Navy fighter pilots realised their adversaries were both skilled and dangerous.

By the time the clashes came to an end, the 343rd Kokutai had claimed 52 aerial victories. Typically for aerial combat in the

Pacific War, the IJNAF pilots wildly overclaimed in the heat of battle. TF 58 had actually lost 14 fighters. The 343rd had 15 fighters shot down and 13 pilots killed in aerial combat. Although last into the action, Sento 301st Hikotai had been credited with the most victories, including nine to CPO Katsue Katoh — this tally was revised to four destroyed and a probable. Squadron-mate CPO Shoichi Sugita demonstrated he had lost none of the flying skill that had

made him a high-scoring ace by downing three enemy fighters.

Pilots noted post-mission that the Shiden-Kai's 20mm Type 99 cannon had proven itself a deadly weapon. Matsuba, who claimed two successes prior to his fighter being shot up, reported to Genda that the power of the cannon was "enormous," stating, "if our range is right the enemy can be knocked out with one burst."

**“Pilots noted post-mission that the Shiden-Kai's 20mm cannon had proven a deadly weapon”**

VBF-17, embarked on USS *Hornet* (CV-12), was one of those units that had felt the full force of the Shiden-Kai's powerful

battery of four cannon, having nine fighters destroyed on 19 March. The squadron's after-action report for the mission reflected the high calibre of the opposition it had faced over Shikoku: "It was the opinion of the more experienced pilots of this squadron, who participated in this melee, that the Jap pilots encountered here were superior to those met in the Tokyo area. They handled their aircraft well, were exceedingly aggressive and exhibited good organization,

discipline and tactics. Their tactics were similar to those of the US Navy. They appeared to be well trained and experienced in combat flying."

### Kamikaze escorts

The 343rd Kokutai next saw significant action while trying to defend aircraft carrying out suicide attacks on US Navy vessels supporting the amphibious landing on Okinawa, which had begun on 1 April. For this operation, the unit was transferred from the 3rd Air Fleet to the 5th Air Fleet on the day of the invasion. The kokutai's primary mission would be to open the air corridor for the flow of kamikaze aircraft heading south-west to Okinawa. This new assignment also meant Shiden-Kai pilots would have to embark on very long-range missions, flying from Kanoya to Amami-oshima and back. The one-way distance was more than 240 miles, and these sorties would last in excess of two hours. Furthermore, pilots only had sufficient fuel for a maximum of 15 minutes of combat at full power.

Just 48 hours after the last Shiden-Kai reached the unit's new airfield at Kanoya from Matsuyama, the 343rd attempted to sortie 44 aircraft for an escort mission on 12 April. As the formation neared the island of Kikaiga Shima, the 343rd pilots saw that its airfield was coming under attack by Hellcats. The unit dived headlong after several Hellcats in the midst of their strafing run, and within minutes the kokutai found itself engaged by an estimated 80 fighters. Outnumbered, the 343rd suffered heavy casualties, 10 pilots being killed in what turned out to be a 'turkey shoot' by American standards. In return, the 343rd was credited with 20 Hellcats and three Corsairs destroyed. Only a fraction of this number had in fact been lost.

In their post-mission reports, US Navy and US Marine Corps pilots noted that their opponents were flying aeroplanes that "were hard to burn due to their armor plating and self-sealing tanks". It was also stated that the IJNAF fighters were fitted with 20mm cannon only, and



Lt Ryoichi Yamada of the 343rd Kokutai's Sento 407th Hikotai was at the controls of a Shiden on 19 March 1945, having volunteered to fly an N1K1-J following his service with Sento 402nd Hikotai in the Philippines. He would need all that experience to survive a seven-minute dogfight with two Corsairs directly overhead Matsuyama airfield, the Shiden being hit numerous times and Yamada eventually having to belly-land his battered fighter. VIA YASUHO IZAWA

“there were no small-caliber guns”. Although Corsair and Hellcat pilots acknowledged that the Shiden-Kai could out-turn both types, the Japanese pilots were criticised for their lack of organised tactics. Naval aviators from VF-17 also noted that the enemy fighters had excellent climbing characteristics and superior speed, and when confronted with Hellcats on their tails, the Japanese pilots would snap-roll to the left. Their automatic combat flap system saved them time and time again.

The combat experience of the 343rd Kokutai in the handful of engagements it had fought since 19 March had starkly revealed that even with good leadership, experienced aviators (the unit-wide average was 500 hours of flying time per pilot) and a superb fighter, one kokutai could do little to stem the Allied tide of destruction now washing over the home islands of Japan. American radar-directed combat air patrols, an overwhelming number of Hellcats and Corsairs and excellent radio communications were costing the IJNAF dearly.

During the morning of 16 April the 343rd again supported the kamikaze offensive against Allied warships off Okinawa by attempting to clear a path through American fighter cover for the highly vulnerable Tokko aircraft heading south. As the IJNAF pilots approached their destination at 19,500ft, unbeknownst to them their progress had been monitored for the previous 30 minutes by American radar. A large number

of Hellcats were duly vectored to meet them, approaching the Shiden-Kai formation with a height advantage. Despite having no fuel reserves, and operating at the very limit of their range, the 343rd pilots nevertheless engaged the enemy fighters as they had been ordered to. The kokutai lost nine more pilots in the ensuing action, including the high-scoring hero of 19 March, CPO Katsue Katoh.

Also on 16 April, the 343rd Kokutai relocated to Kokubu No 1 airfield, 25 miles north of Kanoya. The latter site, often packed with suicide aircraft, was proving too crowded for the Shiden-Kai unit. Moreover, it was being increasingly targeted

## “The automatic combat flap system saved the Japanese pilots time and time again”

by USAAF heavy bombers. The 343rd moved again on the 25th, this time to Omura, as Kokubu was now also being continually attacked by American aircraft — it was bombed eight times during the unit’s nine-day stay.

The 343rd Kokutai was again tasked with kamikaze escort during early May. On the 4th, 36 Shiden-Kais sortied from Omura, bound for Amami-oshima. En route, they passed small groups of slow-moving kamikaze aircraft silhouetted against the sea as they hugged the waves to avoid detection by US radar on their way to Okinawa.

Shortly thereafter the 343rd pilots engaged Hellcats over Kikaiga Shima, and Lt Goro

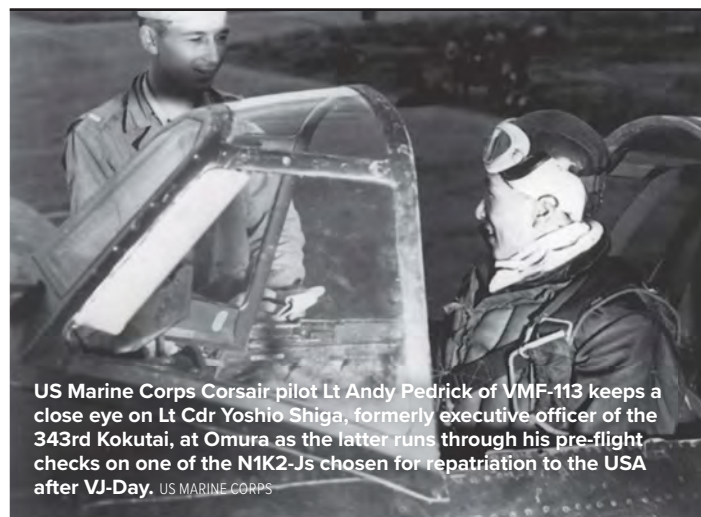
Ichimura led Sento 407th Hikotai into action. He subsequently recalled, “The Shiden-Kais spread out to form a fighting formation of two-aircraft sections. Immediately, I changed fuel supply from the drop tank to the main tank, pulling the drop lever hard. At the same time the engine throttle was opened all the way, the gunsight was switched on and the four 20mm guns were test-fired. The combat flaps, of course, had already been charged to automatic. I was ready for combat.”

Battle quickly ensued. Despite the IJNAF pilots forming up into two defensive Lufbery circles and claiming 13 victories (not a single F6F was in fact lost — four

1945, TF 38 turned its attention back to the home islands. Naval aircraft struck Tokyo, Hokkaido and Honshu between 10 and 18 July. At Omura, the 343rd’s ability to function effectively was being steadily reduced as its airfield became the target of a sustained bombing campaign.

During the morning of 24 July, more than 500 carrier aircraft were launched on strikes against Japanese vessels in Kure harbour. Against this mighty force, Genda could only send 24 serviceable Shiden-Kais aloft. He knew his best chance of success was to hit the enemy aircraft when they were heading back to their carriers, possibly with flak damage and definitely low on fuel. Shortly after 09.00hrs, all three sento hikotai sortied fighters. The 343rd lost six pilots, including two aces, during a fiercely fought engagement over Bungo Strait. In return, the kokutai had claimed 16 enemy aircraft shot down. This proved to be the final large-scale clash between the 343rd Kokutai and US Navy fighters.

On 15 August, Emperor Hirohito’s surrender speech was broadcast live over loudspeakers at Omura, Genda having assembled all personnel to listen to the address. Later that day the 343rd Kokutai’s executive officer, Lt Cdr Yoshio Shiga, led all airworthy Shiden-Kais — 18 aircraft — aloft for one last flight in the immediate vicinity of Omura. By war’s end the 343rd Kokutai had claimed more than 170 victories in five months of combat, at a cost of 82 pilots killed and 14 wounded.

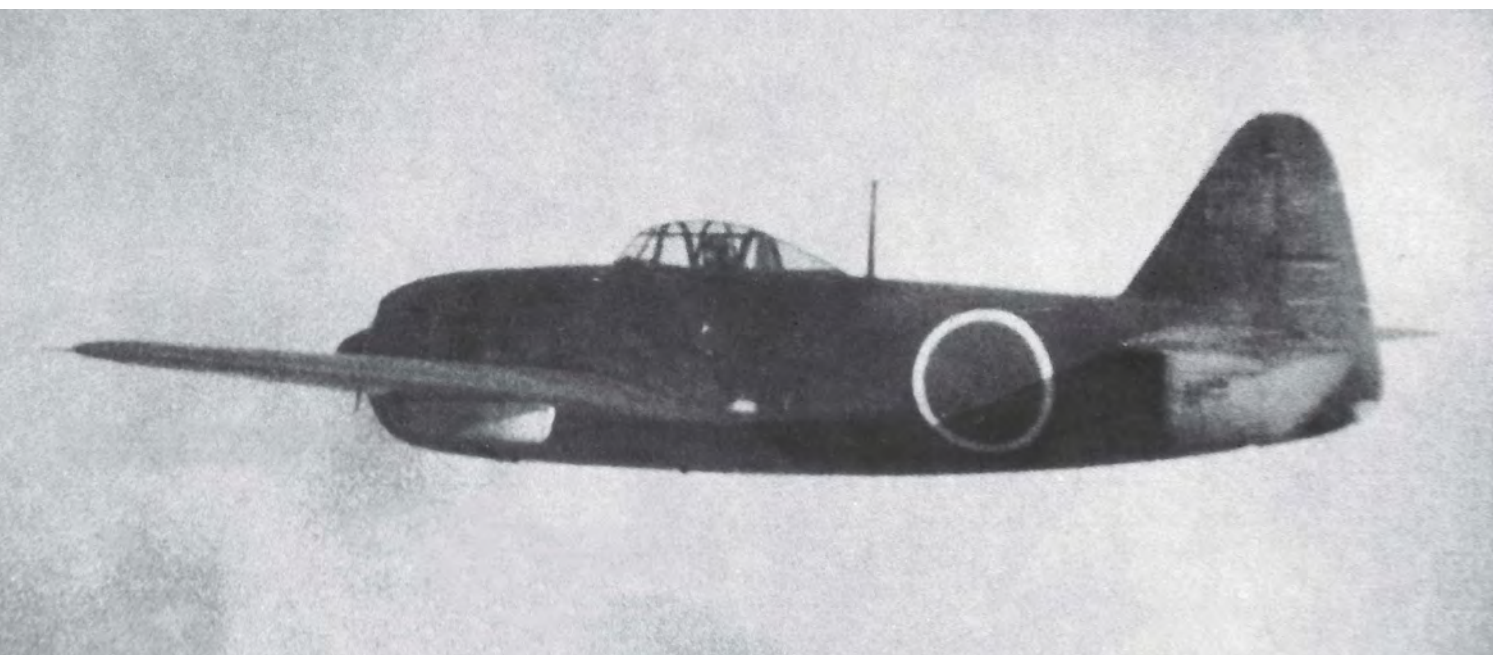


US Marine Corps Corsair pilot Lt Andy Pedrick of VMF-113 keeps a close eye on Lt Cdr Yoshio Shiga, formerly executive officer of the 343rd Kokutai, at Omura as the latter runs through his pre-flight checks on one of the N1K2-Js chosen for repatriation to the USA after VJ-Day. US MARINE CORPS

## DATAFILE

### INTO AMERICAN HANDS

When US forces occupied Omura on 14 September 1945, they found 80 N1K2-J Shiden-Kais of the 343rd Kokutai there. In accordance with the surrender directives, the propellers and spinners had been carefully removed to render them non-airworthy. The following month, six of the fighters were restored to airworthiness and flown (following the addition of US insignia) by former IJNAF pilots to test their suitability for shipping to the USA for further evaluation. Those deemed to be in the best mechanical condition were eventually flown to Yokosuka on 16 October, fitted with drop tanks for the ferry flight. Although a handful of Shiden-Kais were later shipped to the USA for evaluation, the majority were destroyed by fire on 30 December 1945.



Ace WO Ryoji Oh-hara of the Yokosuka Kokutai goes in search of enemy aircraft during a patrol over the Kanto Plain in early 1945. VIA YASUHO IZAWA

At least two N1K1-Js of a handful abandoned by retreating Japanese forces at Clark Field in the Philippines and found by US Army troops were restored to airworthiness by the Technical Air Intelligence Unit-South West Pacific (TAIU-SWPA) and briefly test-flown. *Technical Air Intelligence Center Summary No 33* gave an insight into the Shiden's performance aloft.

Of the preliminary flight test, the report said, "One flight was made for a total of one hour and forty-five minutes. The main purpose of the flight was to make the initial check and get the airplane in mechanical condition for tactical trials. The airplane was in excellent shape mechanically, except for the brakes, but was slightly left wing heavy. The right oleo leg collapsed at the end of the landing roll, and the aircraft was badly damaged". It added that a Japanese prisoner had described "considerable difficulty with the landing gear in particular", possibly as a result of the initial floatplane-to-landplane conversion.

The conclusion of that phase of testing read, "Excellent take-off, climb, high speed and good vision, but does not impress the pilot with that feeling of confidence which one normally gets in a good, substantial

airplane". The centre said the N1K1-J's favourable features were good vision, stability, take-off qualities, performance and instrument layout, the automatic propeller throttle control, its high diving speed, and the rudder and elevator control on approach and landing. Against that, rated "poor" were its stalling and accelerated stalling characteristics, the brakes and the rudder brake action. The landing gear was felt "weak", the undercarriage and flap system "complicated", and the controls

**“The controls are unbalanced in that the rudder and elevator are much lighter than the ailerons”**

"poorly balanced", while the ailerons became heavy at high speed.

An Allied pilot's evaluation report on a test flight in an N1K1-J said, "This airplane was flown from a macadam [crushed stone] runway. Taxiing and ground handling, in general, is poor, due to poor brakes. Foot brakes are fitted on a narrow-type rudder bar and do not operate well. Rudder is not effective for taxiing. There is no tail wheel lock fitted. Taxiing with the flaps extended is improved due to the fact that the throw of the rudder is increased from 23° to 33° with flaps down.

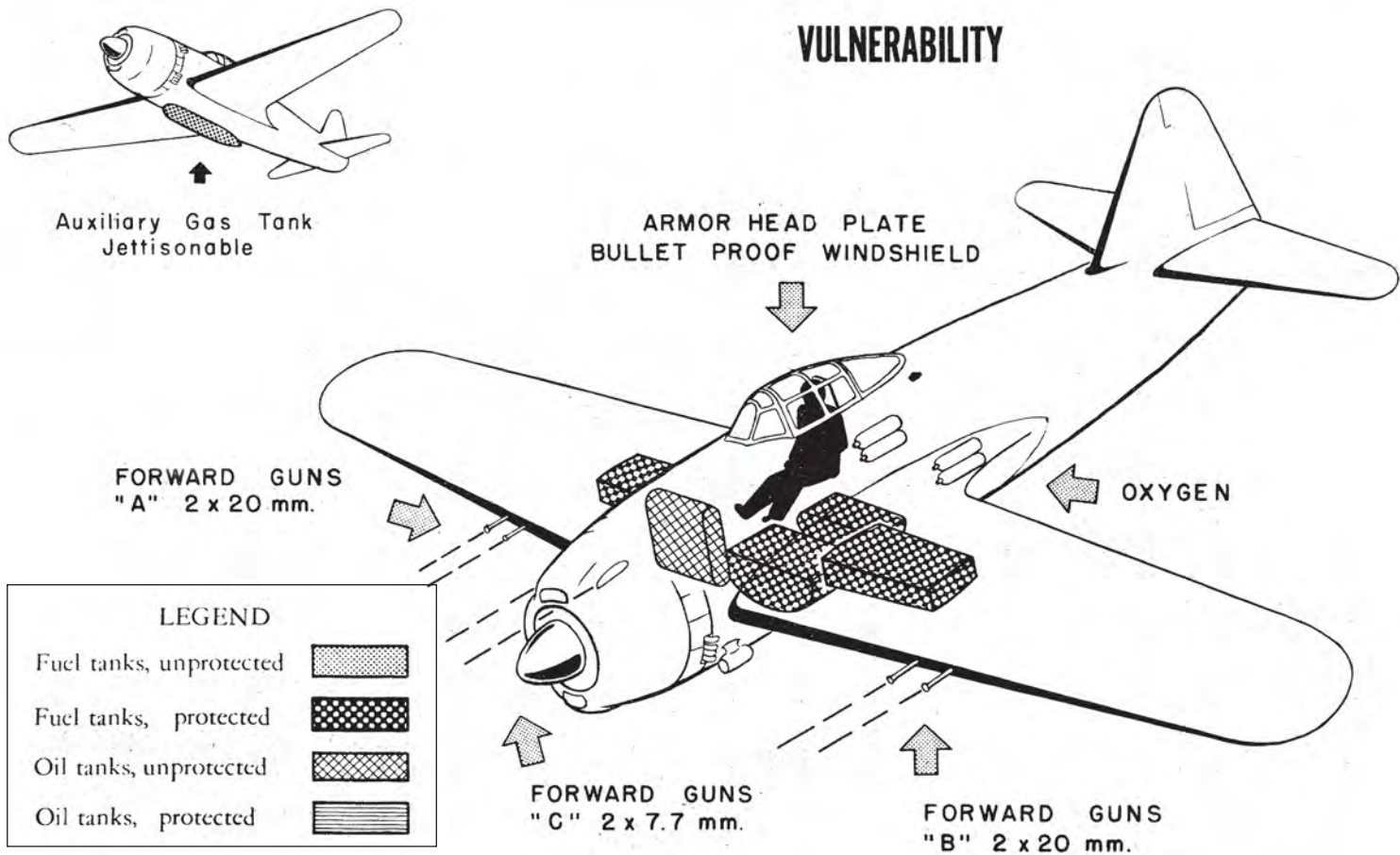
"Take-off is normal, with little tendency to swing, if the power is applied gradually. Airplane is tail-heavy and the tail does not come up very readily. Take-off run is short and the airplane leaves the ground easily at about 105mph. Landing gear retracts slowly with little change in trim. Initial climb is excellent. Landing flaps were not used for take-off.

"Climb is very good. At 2,350rpm and manifold pressure of plus 200mm (34" Hg), indicated speed 140mph,

speed and power. Stability was checked at 7,000ft, with manifold pressure minus 150mm (24.0" Hg), 2,100rpm, oil and cowl flaps closed, air speed 189mph indicated. Directionally and longitudinally, it is statically and dynamically stable. Laterally, it is just about neutrally stable. Stability of this airplane at cruising speed can be considered excellent.

"Airplane was stalled clean and dirty. The airplane has a bad left wing stall under all conditions and will half-roll if not caught in time. There is no stall warning except when the cowl flaps are open. This airplane can be considered to have very poor stalling characteristics.

"George' cannot be considered good for either maneuverability or acrobatics [sic]. It has a good rate of roll below 320mph, and light elevators so that it turns well, but the controls are unbalanced and the stick is too high and too far forward. Pilot is continually aware that there is always a heavy nose in front of him, and in addition the airplane has a bad accelerated stall. It does a snap 1/3rd left roll at 125mph in 2g left or right turn. Rolls and Immelmans were executed but the airplane does not do them nicely. It had no maneuver flaps installed. No rough



**ABOVE:** This illustrated page was taken from the detailed TAIC report on the 'George'. The purpose of these diagrams was to illustrate the aircraft's areas of vulnerability to fighter pilots and ships' gunners alike.

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

maneuvers were executed as this airplane had previously been crashed and rebuilt and the strength of the repair was an unknown quality. It is believed that the airplane can easily be damaged by rough handling of the light elevators.

"Changes in trim with the use of flaps and gear are all in the right direction. Change in trim with the use of gear is small and easily turned out. This aircraft is fitted with a device which changes the actuating arms of the elevators and rudder as the

flaps are lowered. This device increases the rudder throw from 23° to 33° and the elevator from 17° up; 14° down to 35° up; 240° down. As the flaps are lowered the stick moved forward due to the fact that the elevators rotate upwards. Fowler type flaps are fitted and considerable 'up trim tabs' is required to keep the aircraft trimmed during the approach and landing. Trim changes due to use of oil and cowl flaps are negligible.

"Engine was smooth at all rpms up to the maximum of 2,900. There is no undue noise or vibration in the aircraft.

"Approach is not considered too good due to the fact that the gear and flap handle must be returned to neutral or there is no brake pressure, and there is too much change in trim as the flaps go down and as the airplane is slowed down for landing. Other than that, approach is very straight forward. Airplane is easy to land, with all oleos being soft. The tail comes down readily. Vision for the approach and landing is excellent. Only one landing was made and it was made in a cross-wind. The airplane is stable in the landing



Coded S9, this aircraft was the second Shiden to be flown by the TAIU-SWPA, completing a number of sorties. USAAF and US Navy test pilots found the N1K1-J to be an excellent high-performance fighter, although its fragile landing gear was a major weakness. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

run, but it should never be operated on prepared runways due to poor brakes. PoW reports that brakes should never be used in this airplane unless necessary, and then only at the end of roll. This is due to weak fitting of landing gear to wing as evidenced by the continual large amount of walk of gear even on fairly smooth ground. Airplane should be operated only off smooth sod fields.

“Power plant, in general, is very satisfactory. It is easy to start cold, but loads up when hot. Engine is smooth at all rpms. Mixture control is similar to that found on the US AT-6 type, with a positive lock fitted. Propeller operation is hooked into the throttle and works very well. This automatic propeller-throttle arrangement should be a decided advantage in combat. Engine cooling on this airplane was not good. Cowl flaps had to be opened up fairly wide in normal climbs and cylinder head temperatures were very dependent on cowl flap openings. Oil cooling appeared

“An interrogation of a PoW reveals that he heard it was a very difficult plane for the pilots to handle”

to be adequate. High blower was not used.

“Airplane flaps and gear are hydraulically operated. Neither the flaps nor gear system are considered satisfactory.”

In conclusion, the pilot said that although the aircraft “appears to function satisfactorily in the air, it is apparently difficult to maintain in operation because of its weak landing gear. An interrogation of a PoW reveals that he heard it was a very difficult plane for the pilots to handle and they didn’t like it. It was particularly tricky in landing and taking off, and there were accidents and crack-ups in almost every landing. There had been particular difficulty with the landing gear, and this had held up production a great deal. The gear would simply crumble under any kind of a strain at all.”



The largely unrestored N1K2-J exhibited in the Nanreku Misho Koen museum. EDWARD M. YOUNG

## SURVIVING SHIDENS

**N**1K2-Ja construction number 5128, displayed in the National Naval Aviation Museum in Pensacola, Florida, was one of the aircraft shipped to Virginia on board USS *Barnes* (CVE-20) in November 1945. It was passed on to the US Navy by the Army Air Forces and sent to the Naval Research Laboratory in Washington DC in 1946. Left to become derelict in a nearby children’s playground after it was declared surplus to requirements by the US Navy, the fighter was placed in storage at NAS Norfolk, Virginia, in 1957. Subsequently loaned to the New England Air Museum at Windsor Locks, Connecticut, in 1975, the Shiden-Kai was restored by Georgia Metal Shaping in 1994-95 and handed back to the US Navy in 1998 for display in what is now the NNAM.

Another example that went to the USA aboard USS *Barnes* was a N1K2-J with construction number 5341. Probably evaluated by the Naval Aircraft Factory in Philadelphia, it ended up as part of the Axis aircraft collection at NAS Willow Grove until 1983, when it was acquired by the Smithsonian Institution. Initially stored, the Shiden-Kai was restored between 1991-94 by the Champlin Fighter Museum in Mesa, Arizona. It is now on display in the Steven F. Udvar-Hazy Center in Chantilly, Virginia.

The N1K2-J exhibited in the National Museum of the US Air Force at Wright-Patterson AFB, Ohio, is believed to be construction number 5312. Declared surplus to requirements following evaluation by the AAF in the late summer of 1946, the aircraft somehow ended up under

the control of the City of San Diego. Donated to the USAF in 1959, it was displayed within the USAF Museum until being removed in 1998 to undergo a 10-year restoration using parts sourced from wrecks found in Japan immediately post-war and kept in long-term storage.

An N1K2-J was recovered from Hido Bay in Ehime Prefecture, Japan, on 14 July 1979. It was almost certainly the mount of Ensign Kaneyoshi Muto, one of six pilots from the 343rd Kokutai who failed to return from operations on 24 July 1945. The Shiden-Kai was never fully restored, the airframe having its covering of barnacles sandblasted prior to being repainted, but no repairs were made. It is displayed in a small museum at Nanreku Misho Koen, overlooking the bay from where it was recovered.



The Smithsonian’s N1K2-J on display in the National Air and Space Museum’s Udvar-Hazy Center in Virginia. NASM