

DATABASE

MITSUBISHI J2M RAIDEN

WORDS: TONY HOLMES



Development
In Service
Insights

ABOVE: Two ex-381st Kokutai J2M3s were returned to airworthiness by the RAF, with the help of Japanese personnel, in early 1946. They were then flown by IJNAF pilots working with the Allied Technical Air Intelligence Unit South-East Asia (ATAIU-SEA) from the former IJNAF airfield at Tebrau, on the Malayan mainland. These flights were for the benefit of the press or visiting VIPs, as there is no evidence to suggest that any performance measurements or equipment evaluations were made. VIA PHILIP JARRETT

15
IN-DEPTH
PAGES

Page 96 THE NEW FIGHTER'S TROUBLED BIRTH

Page 100 MIXED FORTUNES IN COMBAT

Page 107 THREE-VIEW SCALE DRAWINGS

Page 108 RAIDEN FROM THE COCKPIT



Development

The Raiden endured a troubled birth, and many of its teething problems would never satisfactorily be ironed out

When the Imperial Japanese Naval Air Force (IJNAF) launched its surprise attack on the US Navy's Pacific Fleet at Pearl Harbor on 7 December 1941, the Mitsubishi A6M Zero-sen was the world's best naval fighter by some margin. It retained a position of dominance until late 1943, when a new generation of American naval fighters in the form of the Vought F4U Corsair and Grumman F6F Hellcat wrested control of the skies from the IJNAF.

With the Zero-sen's replacements delayed by technical problems and the vacillation of senior naval officers, front-line units were forced to fight on with the increasingly obsolescent A6M. Mitsubishi had done its best to keep the aircraft as effective as possible with continual improvements to its armament and more powerful engines.

What was needed was an all-new fighter, or fighters, and Mitsubishi had been working on such a machine. Whereas the Zero-sen had been the culmination of a decade of experience accrued by Mitsubishi in building carrier-based fighters for the IJNAF, its new aircraft would be a land-based machine, as requested by the Naval Staff. In a

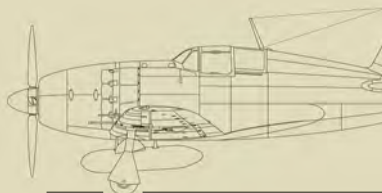
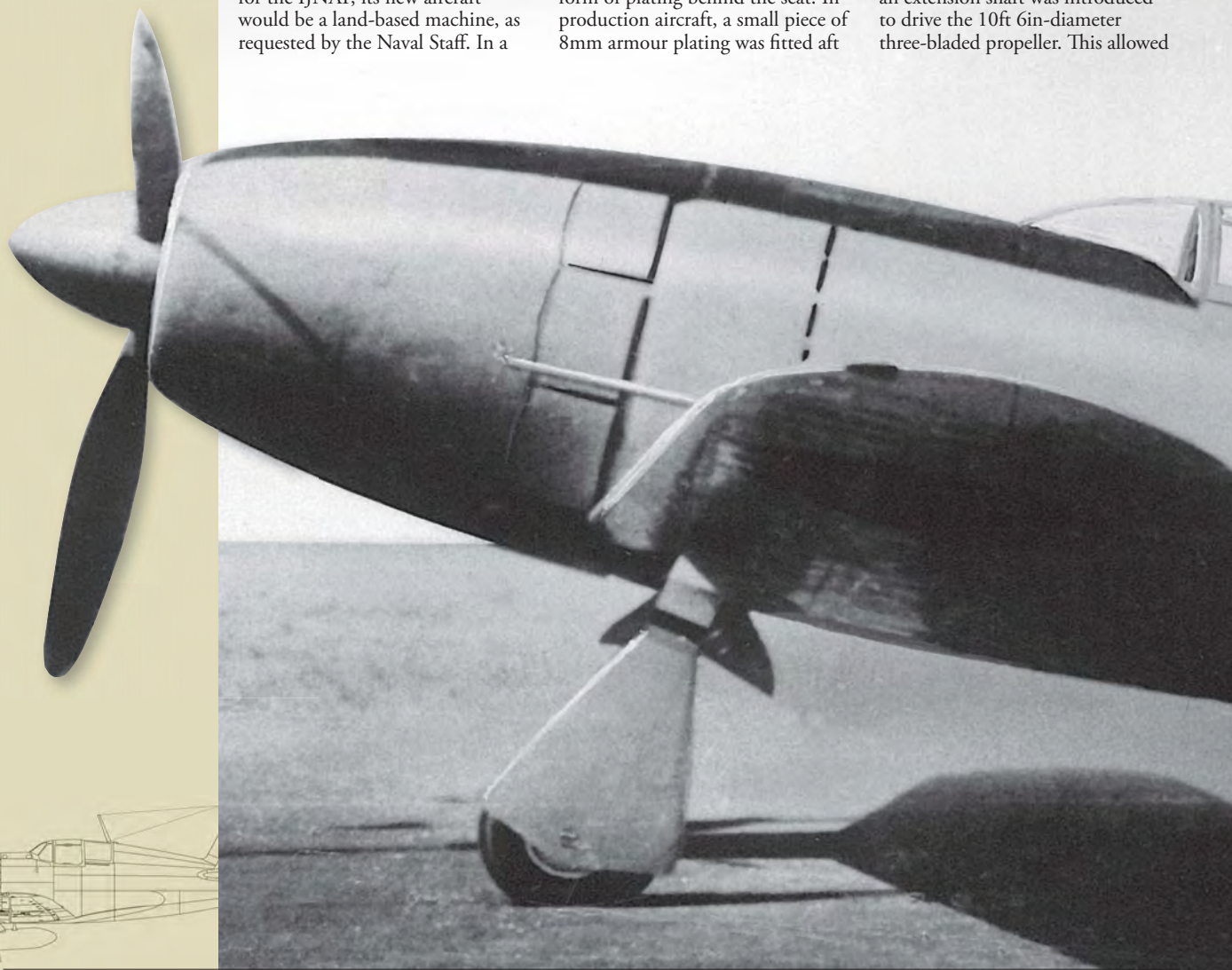
radical departure in IJNAF thinking, Mitsubishi was instructed to build an aeroplane that stressed speed and rate of climb over manoeuvrability and range.

The company's chief engineer Jiro Horikoshi (who had created the A6M) and his design team initially discussed the new interceptor with the IJNAF's Bureau of Aeronautics in October 1938 as part of the 14-Shi (14th year of the Showa reign, or 1939) armament programme, but Mitsubishi's preoccupation with the A6M saw the aircraft shelved until September of the following year, when an official specification was drawn up. The performance parameters called for a maximum speed of 373mph at 19,685ft, the ability to attain this altitude within 5.5 minutes, endurance of 45 minutes at full power, 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), and for the first time armour protection was requested for the pilot in the form of plating behind the seat. In production aircraft, a small piece of 8mm armour plating was fitted

of the pilot's head, protecting just the base of his neck.

The key to the 14-Shi's performance would be its engine, and Jiro Horikoshi was given a free hand in choosing the powerplant. Both the V12 Aichi Ha-60 Atsuta, rated at 1,200hp, and the 1,430hp Mitsubishi Ha-32 Kasei ('Mars') Model 13 radial were evaluated. Horikoshi opted for the latter despite its greater weight, larger frontal area and higher fuel consumption. This would prove to be an unfortunate choice.

Assisted by Yoshitoshi Sone and Kiro Takahashi, Hirokoshi began detail design work in early January 1940 on what by this time bore the Service Aeroplane Development Programme number M-20. It was an all-metal cantilever low-wing monoplane, the wing having a single main spar at 35 per cent chord and smooth flush-riveted stressed skinning. The metal-framed control surfaces on both the wings and tail were fabric-covered. The wing was of low aspect ratio and employed a laminar-flow aerofoil section. The fuselage was an oval-section semi-monocoque. In order to minimise the drag of the Kasei 14-cylinder engine, an extension shaft was introduced to drive the 10ft 6in-diameter three-bladed propeller. This allowed



the cowling to be finely tapered, with an engine-driven fan sucking cooling air through a narrow annular intake. In a further attempt to reduce drag, an extremely shallow, curved windscreen and canopy were adopted. The aircraft was fitted with Fowler combat flaps to increase lift with the minimum of drag when extended and thus improve manoeuvrability. In an effort to simplify manufacture, forged components were used wherever possible.

Mitsubishi's focus on development and production of the A6M, combined with teething troubles suffered by the engine cooling system and the laminar-flow aerofoil section, conspired to delay completion of the M-20 prototypes until February 1942. By then the overworked Horikoshi had relinquished the post of chief engineer to Takahashi.

Designated the J2M1 and christened the Raiden ('Thunderbolt'), the first prototype made its maiden flight from Kasumigaura on 20 March 1942. Although Mitsubishi test pilot Katsuzo Shima expressed general satisfaction in respect of its stability and controllability throughout the entire speed range, he stated

that the forward view was totally unacceptable and that the curved windscreen badly distorted vision. It was also discovered that the undercarriage would not retract at speeds in excess of 100mph.

By the end of May 1942 Mitsubishi had completed four J2M1 prototypes. These were transferred without any changes (bar a modification to the undercarriage retraction system) to the IJNAF's Air Arsenal at Suzuka for initial service trials. Among the pilots to fly the Raiden at this time was Lt Mitsugu Kofukuda, who had seen combat over China. He had examined a mock-up of the M-20 on 26 December 1940, commenting to Mitsubishi designers that the pilot's view forward over the fighter's "bulky fuselage and long nose" was severely restricted. They explained that this arrangement had been adopted to make the fighter as streamlined as possible.

Once the Suzuka flight programme commenced, Kofukuda and his fellow IJNAF test pilots were quickly impressed by the J2M1's rate of climb, roll rate and Fowler flaps. However, even with the latter deployed, the approach speed was criticised for being too high. This was compounded by

the poor visibility over the nose on landing. By the time preliminary testing of the prototypes had concluded in late July, Kofukuda, Lt Takumi Hoashi and Motonari Suho of the Air Arsenal (the IJNAF's test and evaluation unit), and Lt Cdr Kiyoto Hanamoto of the Yokosuka Kokutai (an IJNAF fighter test and advanced training unit) agreed that the following areas needed rectification: improved vision over the nose of the aircraft through replacement of the curved canopy; replacement of the propeller pitch-change mechanism, which had frequently failed during testing; and engine performance.

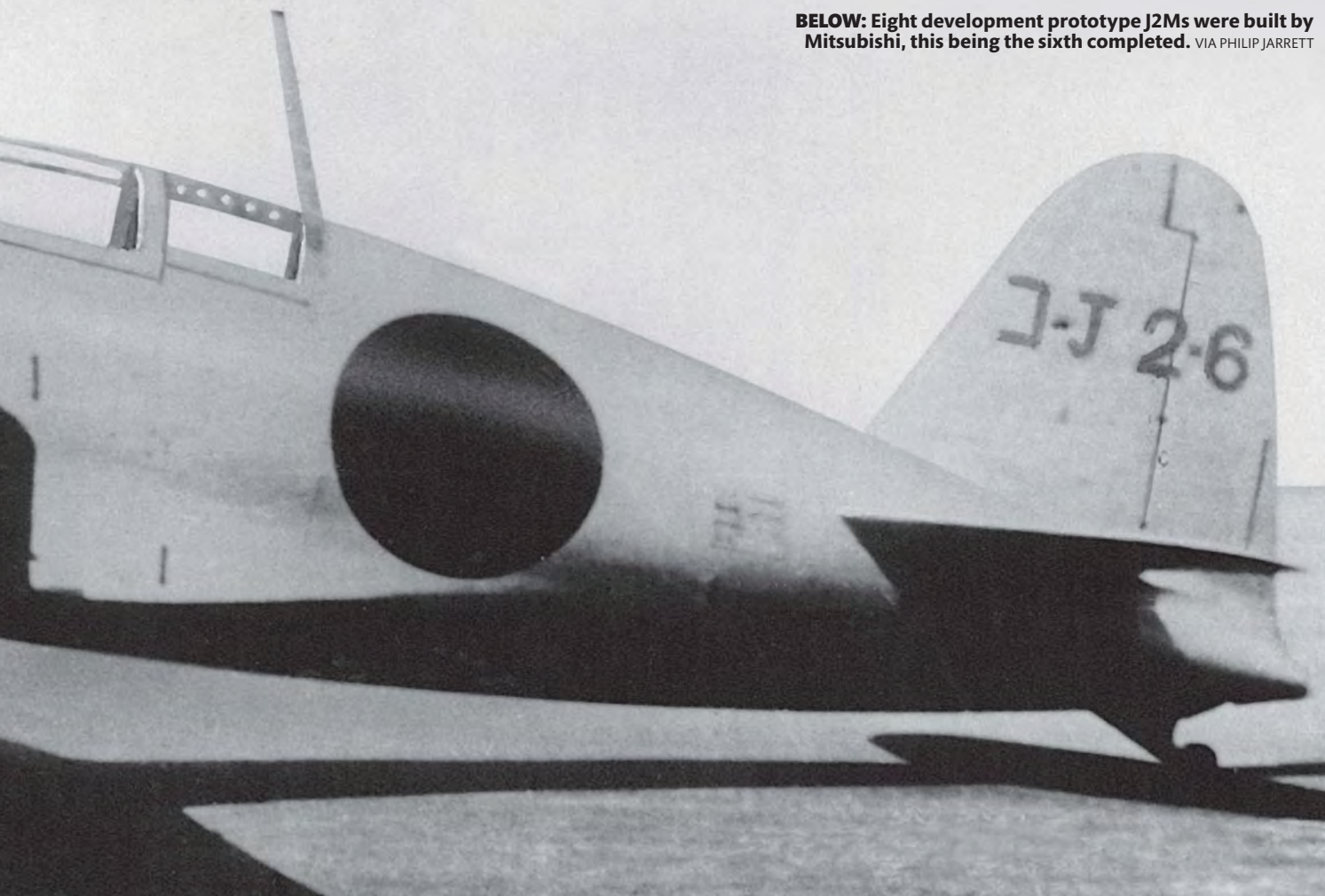
In respect of the latter point, flight trials had shown that the J2M1 fitted with the MK4C Kasei Model 13 failed to attain the performance stipulated in the 14-Shi specification. The aeroplane could not exceed 359mph at 19,685ft, and it took 7.8 minutes to reach this altitude.

Mitsubishi took two months to introduce changes to the fourth prototype Raiden that it hoped would solve all of these issues, completing the modified aircraft — re-designated as the J2M2 — by early October 1942. This had a deeper, more conventional

windscreen that included optically-flat bulletproof panels of 50mm plate glass, and a four-bladed, hydraulically-operated Sumitomo VDM metal propeller. Most importantly, the aeroplane was powered by the MK4R-A Kasei Model 23a, rated at 1,870hp thanks to fuel and water-methanol injection. The engine had been modified to incorporate a fan cooling system in place of the Kasei Model 13's complicated and unreliable extension shaft. With the new engine, the length of the nose could be reduced, further improving the pilot's view on landing.

The IJNAF was so confident that these changes would work that the aircraft was accepted for production as the Navy Interceptor Fighter Model 11 within a few days of 13 October 1942, when the J2M2 made its initial flight, and before any thorough testing. Tooling-up began immediately at Mitsubishi's No 3 (Airframe) Plant at Nagoya. However, it was not long before flight-testing revealed problems with the Kasei 23a. Excessive smoke trails at maximum-rated power were quickly eliminated by adjusting the fuel and water-methanol injection systems, but strong vibration proved difficult to eradicate.

BELOW: Eight development prototype J2Ms were built by Mitsubishi, this being the sixth completed. VIA PHILIP JARRETT





ABOVE: Strapped into the cockpit of an early-build J2M2, Lt Mitsugu Kofukuda conducts engine power checks on a snowy flightline at the Air Arsenal's Suzuka facility in early 1943. A Yokosuka D4Y1 Suisei dive-bomber can be seen parked opposite the Raiden. VIA YASUHO IZAWA

At certain engine and propeller speeds critical and uncontrollable vibration frequency occurred, and many months passed before engineers discovered that the problem could be resolved by increasing the rigidity of the propeller blades and the resilience of engine-mount shock absorbers. Although the vibration issue continued to trouble the Raiden throughout its service life, the fixes allowed Mitsubishi to increase production rates. This was just as well, for the combined effect of these teething troubles and priority given to the A6M resulted in painfully slow deliveries. By March 1943, a full six months after the Raiden had been accepted for production, just 14 (including the three J2M1 prototypes) had been supplied.

With the aircraft now seemingly ready for serious production, three incidents in the space of three months during the summer of 1943 resulted in new delays. The first occurred on 16 June when Air Arsenal pilot Lt Takumi Hoashi crashed the second production J2M2 from a height of just 65ft shortly after taking off on a vibration test flight from Oppama, the unit's home from the spring of 1943. The aircraft hit a barn and broke in two, with the pilot still alive and strapped into the cockpit. Hoashi was just moments away from being dragged to safety when the right wing tank exploded, incinerating the unfortunate pilot and badly burning several of his would-be rescuers. Investigation failed to reveal a definitive cause. A month later, ace CPO Masao Sasakibara of the Air Arsenal managed to land an ill-handling Raiden. Again, the cause could not be ascertained.

Shortly thereafter, the Air Arsenal was visited by a worried Jiro Horikoshi. Among the test pilots he spoke to about these incidents

J2M3 Raiden specifications

POWERPLANT

One Mitsubishi MK4R-A Kasei Model 23a, 1,800hp (1,342kW)

DIMENSIONS

Length: 32ft 7.5in (9.94m)
Height: 12ft 11.25in (3.94m)
Span: 35ft 5.25in (10.80m)

WEIGHTS

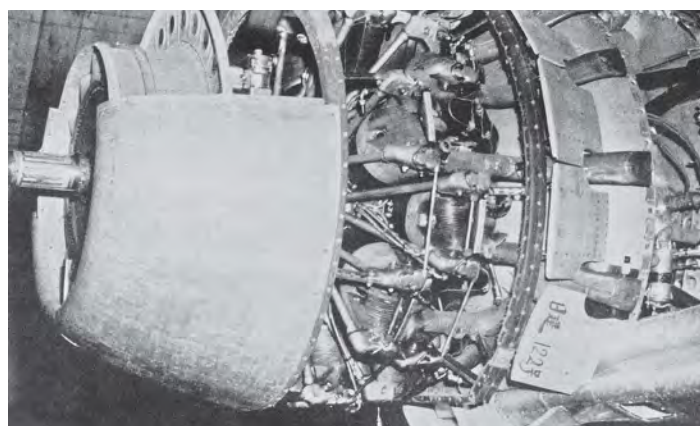
Empty: 5,423lb (2,460kg)
Loaded: 7,573lb (3,435kg)

PERFORMANCE

Maximum speed: 363mph (584km/h)
Range: 655-1,180 miles (1,054-1,900km)

ARMAMENT

Four 20mm cannon in wings; provision for two 132lb (60kg) bombs under wings



ABOVE: The heart of the Raiden – the Mitsubishi MK4R-A Kasei Model 23a engine, rated at 1,800hp on take-off. VIA YASUHO IZAWA

was Lt Yoshio Shiga, who asked the designer if the J2M's problems with engine and propeller vibration had been created by the elongated propeller shaft fitted to the fighter. "Absolutely not", was the curt response.

In early September, Mitsubishi test pilot Eisaku Shibayama had just retracted the undercarriage after taking off in the 10th production J2M2 when, simultaneously, the control column was wrenched forward. Fortunately, he had gained

some altitude before retracting the gear, and Shibayama had the presence of mind to lower the undercarriage immediately. The Raiden's controls then responded normally. After landing, it was found that the tailwheel shock strut had pressed against the elevator torque tube lever during retraction, jamming the controls in the dive position. It was assumed that this had caused the crash of Hoashi's J2M2 and the near-demise of Sasakibara's. A modification was promptly made to the elevator control run, and there were no further incidents of this nature.

A handful of J2M1s were passed on to the Yokosuka Kokutai by the Air Arsenal in the autumn of 1943, both units being based at Oppama. China War veteran CPO Kosaku Toyoda was one of the Yokosuka Kokutai pilots involved in evaluation of the J2M1 in late 1943, performing a series of dives from 13,000ft that saw him recover with a 6g pull-out to test the strength of the airframe. Upon landing, he and his groundcrew noticed that one of the horizontal tailplanes was still shaking after Toyoda had cut the engine and climbed out. Upon closer inspection it was found that the tailplane had failed under the stresses.

The combat veterans of the Yokosuka Kokutai conducted a series of aerial engagements with A6M3s. They found that although the J2M1 was easily outmanoeuvred in a horizontal dogfight, it prevailed when flown to its strengths in 'dive and zoom' attacks. Regrettably, despite noting this attribute in reports, the Yokosuka Kokutai failed to emphasise that this was the best way to use the Raiden in combat against Allied fighters. Had J2M pilots been trained in such tactics the aeroplane could possibly have held its own in aerial combat against American fighters, rather than being restricted to intercepting bombers.

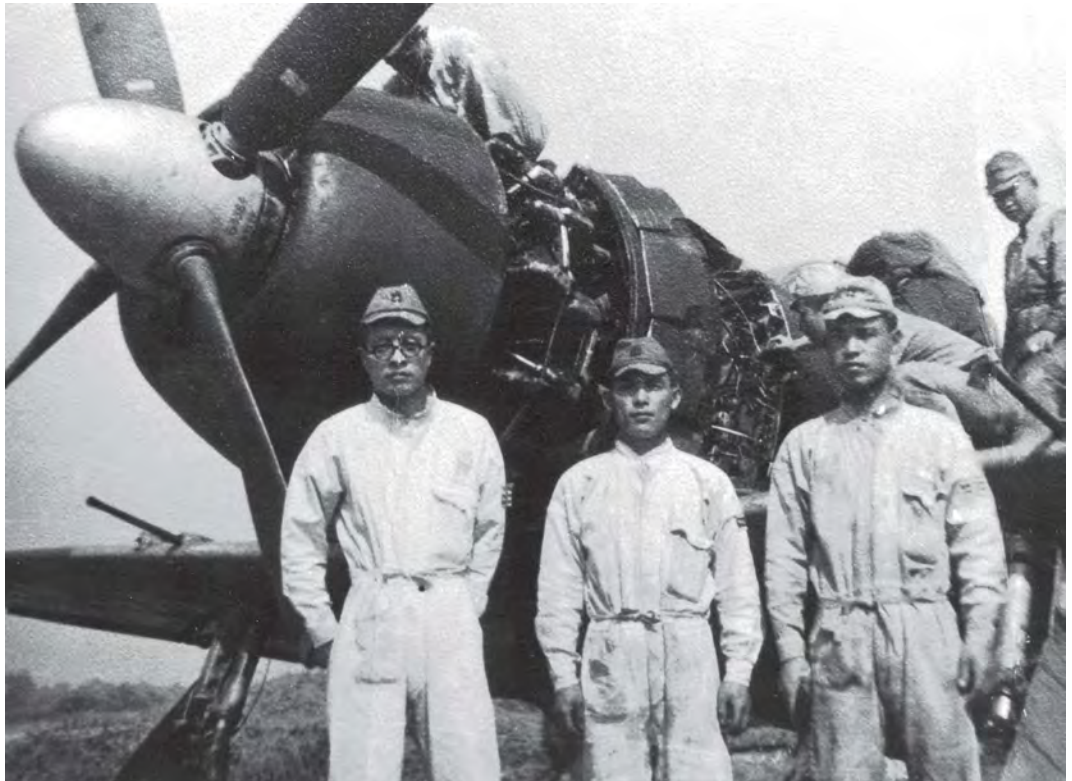
Yokosuka Kokutai test pilots explored the Raiden's suitability as a bomber interceptor by engaging Mitsubishi G4M Rikkos approaching at high and low levels. CPO Ryoji Oh-hara, a veteran of combat over the Solomons, Rabaul and New Guinea, was involved in these flights. He experienced the technical problems that plagued the J2M during this period when engaging Rikkos from head-on and below. Following fellow veteran Ensign Torakichi Tanaka in a mock attack, Oh-hara was alarmed to see the propeller of his Raiden come to a virtual stop, forcing him to dive away and land immediately. The aircraft appeared perfectly serviceable when examined on the ground, so Oh-hara was ordered to repeat his attack profile in the same J2M1 the following day. Sure enough, the propeller stopped when he pulled

the nose of the fighter up to attack the underside of the Rikko. This time the engine stalled too, and Oh-hara made a dead-stick landing from 15,000ft. The propeller pitch governor had failed.

In December 1943 the IJNAF finally accepted its first batch of J2M2s. They were flown to Toyohashi, south-east of Nagoya, for service with the 381st Kokutai. By then, the improved J2M3 had commenced flight testing, featuring a new and enlarged oil cooler with an external intake and four wing-mounted 20mm Type 99 cannon. The two shorter-barrel Model 1 weapons were fitted alongside the original Model 2 long-barrel cannon seen in previous variants. Although the Model 1s had a lower muzzle velocity and rate of fire than the long-barrel weapons, they still packed a far greater punch than the fuselage-mounted 7.7mm machine guns, which were discarded.

Initially manufactured alongside the J2M2 Model 11, the J2M3 Model 21 soon supplanted it in production at Mitsubishi's Nagoya and Suzuka factories. The first series examples were completed at the beginning of February 1944, while the last (and 155th) production J2M2 left the Nagoya line in early May. Despite the improvements, service pilots still complained about the fighter's poor lateral and rear visibility, and its performance. With the J2M2, this had almost reached the specification requirements issued by the IJNAF when it contracted Mitsubishi to build the 14-Shi almost five years earlier. However, speed and rate of climb again fell below par when the heavier, but better-armed, J2M3 was built.

In June 1944, the IJNAF's Bureau of Aeronautics, disenchanted with the Raiden, decided to adopt the faster Kawanishi NIK1J Shiden



ABOVE: Groundcrew from the Yokosuka Kokutai briefly down tools for the camera while their compatriots wrestle with a problem afflicting the Kasei engine fitted to the J2M2 parked behind them at Oppama. VIA YASUHO IZAWA

(‘Violet Lightning’) as its main interceptor. Construction of the J2M would continue, but at a reduced tempo only until availability of the Mitsubishi A7M Reppu (‘Hurricane’) permitted its complete production phase-out. Within weeks the war situation for Japan had deteriorated to such an extent that the Raiden, now seen as one of the only Japanese fighters capable of intercepting B-29 Superfortress bombers, had its production reinstated. The Koza Kaigun Kokusho (Koza Naval Air Arsenal) was ordered to commence building Raidens too.

To improve performance at high altitude, Mitsubishi began experimenting with the turbo-supercharged MK4R-C Kasei Model 23c engine. The mechanically-driven turbo-supercharger allowed the engine's permitted rated power of 1,420hp to be maintained up to 30,180ft, giving the J2M4 Model 34 a top speed of 363mph. Unfortunately, the system was highly complex and prone to failure, forcing its abandonment after just two Model 34s had been built. The J2M5 Model 33 that preceded the J2M4 proved marginally more

successful, this featuring a MK4U-4 Kasei Model 26a engine with a mechanically-driven three-stage supercharger and an enlarged intake manifold. It achieved speeds of 375mph at 26,250ft and was immediately ordered into production at the Koza Kaigun Kokusho. Just 34 had been delivered by war's end due to delays in engine deliveries.

Production of Raidens of all types (including prototypes and experimental models) totalled 476: the IJNAF had hoped to have 3,700 in service by June 1945. **A**

BELOW: The prototype of the J2M3 was issued to the Air Arsenal in October 1943, this variant featuring an enlarged oil cooler and external intake beneath the engine. It was the most-produced of all Raiden variants, 260 being built. This particular aeroplane subsequently served with the Chushi Kokutai in China. VIA YASUHO IZAWA





ABOVE: A small number of J2Ms were issued to the training flights of the Yatabe and Konoike Kokutai in Japan, as well as the Genzan Kokutai in Korea – this factory-fresh J2M3, equipped with a 300-litre drop tank, was assigned to the latter unit. VIA PHILIP JARRETT

The units that operated the J2M in combat endured mixed fortunes with the troublesome fighter, but success was at a premium

381st KOKUTAI

On 1 October 1943 the 381st Kokutai was formed at Tateyama on Tokyo Bay as one of two fighter units raised to protect the vital Balikpapan oil refinery in Borneo. Its three squadrons were primarily equipped with A6Ms, although at least 10 J2M2s were issued, giving the Raiden its front-line debut. The hikotai leader in charge of overseeing the unit's transition was China War veteran Lt Takeo Kurosawa, who found the Raiden better than the A6Ms he had flown previously. However, he quickly realised that it would take time for his less experienced charges to master it.

The runways at both Oppama and Tateyama were soon deemed to be too short for the safe operation of the Raiden by pilots under instruction, so in early November the 381st moved to Toyohashi, south-east of Nagoya.

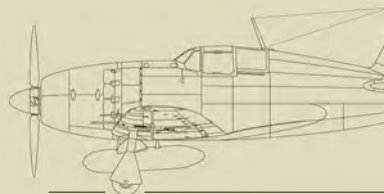
It was not long before the kokutai suffered its first fatality. In mid-January the 30th J2M2 disintegrated directly overhead Toyohashi straight after its pilot had made a firing pass at a target

streamer. It was believed that a violent oscillation commenced when an engine attachment point broke, resulting in a secondary airframe failure. An alternative theory was that an incorrectly-fastened cowling panel had broken away and taken off the tail. Although the engine attachment points were duly reinforced and the cowling fasteners strengthened, other Raidens would reportedly disintegrate in mid-air for no obvious reason.

Aside from this alarming trait, oscillation problems with the J2M2's Kasei Model 23a engine and Sumitomo VDM propeller combination provided the 381st Kokutai with an endless series of problems that were never fully rectified. As a result, it departed for Balikpapan in March 1944 equipped exclusively with Zero-sens, and saw considerable combat throughout the Dutch East Indies. Finally, in early September, news reached the

381st that a small number of J2M3s had arrived in Manila by ship, and on the 8th the first four Raidens arrived in Balikpapan. As many as 10 were eventually operated by the unit's Sento 602nd Hokotai (squadron) for the defence of Kendari in Celebes. Although only a handful of pilots were cleared to fly the J2M, there was no shortage of fuel thanks to the nearby oil refinery. This in turn meant plenty of training flights.

It would appear that the 381st Kokutai finally gave the Raiden its combat



debut on 30 September 1944 when 10 aircraft joined Zero-sens from the unit, and the 331st Kokutai, in opposing a raid by three groups of B-24 Liberators from the 5th and 13th Air Forces targeting Balikpapan from their base on Numfoor Island. At least one victory was credited to a Raiden pilot. Further successes were achieved on 3 October, when J2M3s dived vertically on low-flying B-24s. The defending

fighters suffered heavy casualties seven days later, however, when the previously un-escorted Liberators were accompanied by almost 30 P-47 Thunderbolts and P-38 Lightnings. As many as 13 Zero-sens were destroyed, but the handful of Raidens managed to avoid the P-47s and P-38s and damage a B-24. Due to the ever-increasing fighter escort, the IJNAF's defence of Balikpapan soon ceased to be effective.

In February 1945, Lt(jg) Keishichiro Hattori took off with his wingman to intercept a lone B-24 detected approaching the area at dusk. In what was probably the only night victory credited to the Raiden, Hattori attacked the bomber, which was subsequently seen trailing flames by observers on the ground.

All surviving IJNAF fighter units in the South-west Pacific area were ordered home to Japan

that April. The few remaining Raidens of the 381st Kokutai made it as far as Singapore, where they were discovered by the RAF at war's end. With the help of Japanese personnel, two (see page 95) were returned to airworthiness and flown by IJNAF pilots working with the Allied Technical Air Intelligence Unit South-East Asia from the former IJNAF airfield at Tebrau, on the Malayan mainland.

302nd KOKUTAI

With air raids imminent from bases in China, the Japanese Army Air Force (JAAF) commenced preparations for homeland defence in early 1944. The IJNAF followed suit, although its efforts were focused on the protection of three key naval harbours — Yokosuka, Kure and Sasebo. The defence of Yokosuka, near Yokohama, was to be provided by the 302nd Kokutai, which was formed on 1 March 1944 at Oppama and then moved to Kisarazu on Tokyo Bay. The unit was supposed to be equipped with 48 interceptors (J2Ms) and 24 night fighters (J1N1s), split between two Hikotai. With the 301st Kokutai then having priority for newly-built Raidens, the 302nd initially had to make do with a small number of pre-production J2M2s, painted bright orange to denote their non-combat-worthy status, and surplus Zero-sens.

Ace Ensign Chitoshi Isozaki was among the first pilots in the 302nd to convert onto the Raiden, and commented on how spacious its cockpit was in comparison to the Zero-sen. He thought the J2M inferior to the A6M in horizontal manoeuvrability, although its greater speed and rate of climb made it a better bomber interceptor. Isozaki stated that the Raiden was



ABOVE: The self-proclaimed 'King of Aces', Ensign Sadaaki Akamatsu had been a pilot in the IJNAF since 1932. VIA YASUHO IZAWA

both faster and more stable in a dive than the Zero-sen thanks to it being the heavier of the two. The J2M3 was 1,500lb heavier than the A6M5 when fully loaded with fuel and ordnance.

The serviceability rate of the aircraft supplied to the 302nd Kokutai was particularly poor — rarely more than a third of its Raidens were airworthy at any one time — for its J2Ms were supplied by the nearby Koza Kaigun Kokusho. By the spring of 1944, its workforce consisted primarily of teenage boys.

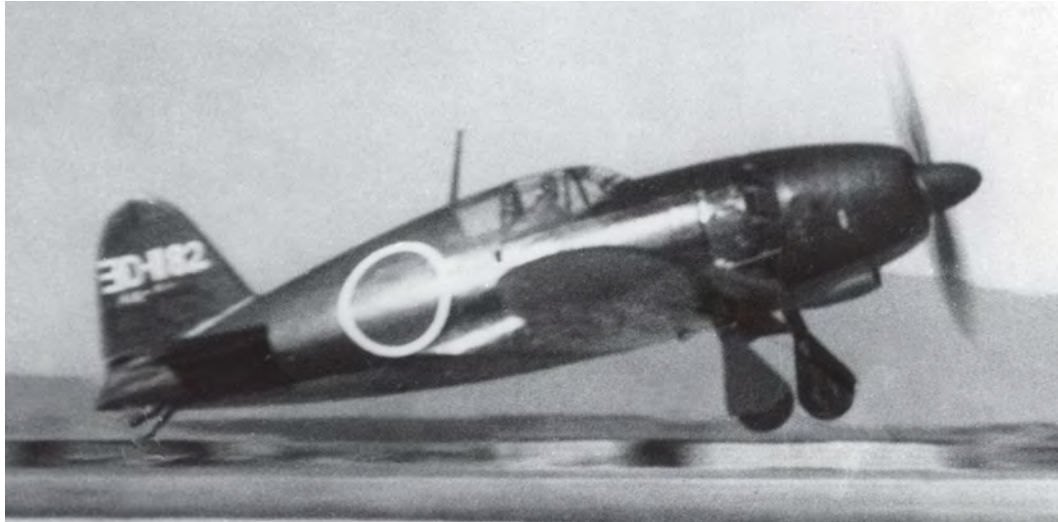
The 302nd Kokutai eventually moved to Atsugi, 20 miles north-west of Yokosuka, in late May 1944 after the 301st Kokutai vacated the airfield for Truk. It inherited a number of Raidens that had been left behind, thus at last giving the kokutai its stated operational strength of 48 J2Ms on 1 July. Some 33 were serviceable on this date.

In September all the Raidens and Zero-sens were assigned to the 1st Hikotai, in turn comprised of two J2M-equipped buntais.



J2M3 Raiden 21 '152'
Lt Susumu Itoh, 302nd Kokutai,
Atsugi, April 1945

DATABASE MITSUBISHI J2M RAIDEN



ABOVE: With an incoming B-29 raid detected, a J2M3 from the 302nd Kokutai is scrambled from Atsugi. Operating a mixed force of Zero-sens and Raidens, the kokutai was one of the main IJNAF units helping to guard Tokyo. VIA YASUHO IZAWA

The remaining hikotai within the 302nd were equipped with J1N1s, A6M3/5s, D4Y2 Suiseis and P1Y2-S Kyokkos, all used as night fighters.

The first B-29s destined to attack targets in Japan from the central Pacific arrived at Isely Field on Saipan in mid-October, assigned to XXI Bomber Command's 73rd Bomb Wing. On 1 November a lone F-13A (the recce variant of the B-29) from the 3rd Photo Reconnaissance Squadron departed Saipan and headed for Tokyo, overflying the Japanese capital at 32,000ft. This was the first American aircraft to venture over Tokyo since the B-25 Mitchells of the 'Doolittle Raiders' on 18 April 1942. The 302nd Kokutai was in the middle of a promotion ceremony at Atsugi when the contrail of the lone Superfortress was spotted by the personnel on parade. Minutes later a warning siren sounded and the unit scrambled 11 Raidens, eight A6M night fighters and nine J1N1s, to no avail.

The American aircraft, having spent 35 minutes over Tokyo, returned to Saipan with exposed film that revealed the locations of the various aircraft manufacturing plants around the city. The photographs proved invaluable for mission planners tasked with identifying targets for XXI Bomber Command's impending offensive against Japan's home islands.

The 302nd Kokutai's next encounter with Army Air Force heavy bombers came on 24 November when a formation of 111 B-29s targeted Tokyo for the first time. An observer post on the Bonin Islands spotted them heading for Nakajima's Musashino engine plant at Mitaka. No fewer than

109 fighters (including 48 Raidens) were scrambled from Atsugi by the kokutai and told to head for the Miura Peninsula. This proved to be too far south of the route taken by the B-29s on their approach to the target, and the kokutai claimed just one bomber damaged for the loss of two fighters, both through mechanical failure.

Weather again intervened three days later when B-29s returned to Musashino, the 302nd failing to intercept them due to dense cloud cover. A third attack on the same target was mounted on 3 December, and this time 24 Raidens were amongst the 74 Japanese fighters that succeeded in engaging the B-29s over Choshi. Employing the high-altitude combat tactics drilled into them over the past nine months, the 302nd claimed six Superfortresses destroyed, three probables and eight damaged, of which three destroyed fell to Raiden pilots. XXI Bomber Command actually lost five bombers.

Recently-promoted CPO Takumi Sugitaki joined several other IJNAF fighters in taking on a lone B-29 over Chiba Prefecture. Deciding to attack head-on, his cannon rounds hit the wing root, splitting open a fuel tank that erupted in flames. Moments later the Superfortress exploded into sections, before plummeting to the ground. Sugitaki then pursued a second B-29 for too long, running out of fuel and being forced to ditch. He was quickly rescued.

A number of promising Raiden pilots from the 302nd were transferred to the newly-formed 343rd Kokutai in late 1944, the latter unit specially established to fly the new N1K1 Shiden and N1K2-J Shiden-Kai fighters. Their loss was keenly felt.

On 16 February, carrier-based US Navy aircraft from Task Force (TF) 58 attacked military targets in the Kanto Plain area of central Honsho. These strikes were part of the build-up to the amphibious landings on Iwo Jima three days later. All the IJNAF fighter units located in the Kanto area were engaged throughout the morning and afternoon, including the 302nd Kokutai — 18 Raidens and 30 Zero-sens from the unit fought with carrier aircraft from 07.15 through to 17.45hrs. Overall, the 302nd claimed eight F6F Hellcats destroyed and one probable for the loss of two Zero-sens.

From late February XXI Bomber Command commenced a campaign of night raids with incendiaries. Sixty-seven Japanese cities would be subjected to such attacks, with bombers typically flying in streams over their targets at between 5,000 and 9,000ft. The Raidens and Zero-sens of the 1st Hikotai had little or no chance of intercepting them.

In an alarming development for Japanese fighter pilots attempting to intercept B-29 formations during daylight, the first P-51D Mustangs were encountered over the home islands on 7 April. The 15th and 21st Fighter Groups had quickly commenced operations from the newly-captured airfields on Iwo Jima, initially performing close air support missions for the US Marine Corps on the island itself before switching to long-range escort. No fewer than 108 Mustangs had been sent aloft on the 7th, escorting 107 B-29s of the 73rd BW sent to attack Nakajima's Musashino plant.

Unaware of the Mustangs' presence, the IJNAF scrambled all available fighters, including 23 Raidens from the 302nd Kokutai.

The Japanese fighters had little problem reaching the B-29s as they approached at just 15,000ft, although they were soon engaged by P-51s. The J2M pilots had initially thought that the latter machines were in fact JAAF Ki-61 Hiens, the American pilots proving to be anything but friendly as they proceeded to shoot down three J1N1s, one D4Y2 and a J2M3. A solitary B-29 was claimed as destroyed in return, with seven more damaged. More P-51s were encountered on 12 April when the 73rd BW targeted the Musashino plant yet again, the IJNAF and JAAF losing 17 fighters between them — the 302nd Kokutai had six Raidens damaged, and claimed one B-29 probable and one damaged.

A week later, 104 P-51s from the 15th and 21st FGs targeted Atsugi in a dedicated fighter sweep that saw the Mustang pilots claim 14 aircraft destroyed on the ground, with a further 53 damaged. Only two Raidens were destroyed. While the 21st FG strafed the airfield, the 15th provided top cover. It was the latter group that tangled with the 19 J2Ms and 10 A6Ms that succeeded in getting airborne during the raid. Lt(jg) Sadaaki Akamatsu led a formation of four Raidens south over the Sagami River, where they spotted a formation of 20 Mustangs. He and his wingman targeted one of the AAF fighters, the latter closing in for the kill when he was told to break off by Akamatsu after a second Mustang was spotted on the tail of the pursuing Raiden. Although both the veteran ace and his wingman survived unscathed, three J2Ms were shot down and a fourth badly damaged.

At least two Mustangs were lost, and although the AAF stated that they were downed by flak, Akamatsu may have actually played a part in their demise. The self-proclaimed 'King of Aces', who had earned a notorious reputation as an undisciplined rebel and womaniser, was widely respected by his subordinates for his fighting abilities — and these came to the fore on 19 April. Although many of his contemporaries openly despised the Raiden because of its lack of manoeuvrability, stating that it could not survive against a Hellcat or a Mustang in a dogfight, Akamatsu was not intimidated by the American fighters now appearing in the skies over Japan. "Our dogfighting techniques were superior to any other country's, but the Americans' shooting average was better than ours", he stated after the war.

As if to prove his point, Akamatsu showed that the Raiden could

indeed defeat a Mustang with the aid of a height advantage. Attacking from above, the 34-year-old veteran claimed that he forced two P-51s into a low-altitude engagement that saw him shoot both down.

From 17 April, XXI Bomber Command targeted 18 JAAF and IJNAF airfields on the home island of Kyushu, from where Japanese kamikaze aircraft had been launching attacks — using the codename ‘Kikusui’ (‘Floating Chrysanthemum’) — on US Navy vessels involved in the amphibious landings on Okinawa that had commenced on 1 April. In an effort to blunt these raids, 19 Raidens from the 302nd Kokutai, led by Lt Susumu Itoh, were sent to Kanoya, along with 17 J2Ms from the 332nd Kokutai and seven from the 352nd. Assigned to the 5th Air Fleet, the J2M pilots, who dubbed this combined kokutai the ‘Tornado unit’, relied on ground control radar when it came to intercepting incoming raids.

Itoh would participate in all the bomber interception missions flown

by the unit from Kanoya, claiming two B-29s destroyed and three damaged during a period of intense action. A veteran of early combats with Superfortresses over Tokyo in November 1944, he explained many years later to Japanese aviation historian Dr Yasuho Izawa that initial clashes with the heavy bombers above the Japanese capital usually took place at altitudes exceeding 33,000ft. Itoh noted that intercepting the aircraft at such heights was very difficult, with pilots noting that they felt as if the B-29s “popped up out of nowhere” due to the limited field of vision from the Raiden’s cockpit. This in turn meant that there was no time to perform pre-rehearsed attacks, pilots instead having to make fleeting high-speed passes at the B-29s. Typically, it took two or three passes to bring a Superfortress down, hence the low number of kills credited to the 302nd Kokutai in this period.

B-29 raids on airfields on Kyushu were normally flown from below 16,600ft, which meant Raiden pilots could position themselves

ahead of the bombers so as to attack head-on in a single pass from above. These formations were considerably smaller, at between 10 and 20 aircraft, than the raids that targeted Tokyo five months earlier. Again, the only Raiden pilots to enjoy success were those who pursued the B-29s as they departed Kyushu and headed south back to Iwo Jima.

After numerous engagements, the final clash between Raidens and B-29s over Kanoya took place on 10 May when 12 aircraft from all three kokutai were led into the air by Itoh. The IJNAF pilots failed to damage three aircraft between them.

On 16 May the 302nd returned to Atsugi, where it came under the control of the 3rd Air Fleet. The kokutai’s next encounter with the enemy came on 29 May when three Raidens and eight Zero-sens were among the IJNAF fighters that intercepted 454 B-29s heading for nearby Yokohama. The bombers were escorted by 101 Mustangs

from the 15th and 21st FGs. In the most successful day of aerial combat for the very long-range P-51 units in World War Two, the US fighter pilots were credited with 28 victories for the loss of three Mustangs and one pilot. The Japanese fighters engaged the enemy formation just east of Mount Fuji, P-51s clashing with IJNAF aircraft all around the B-29s. The 302nd lost three of its J2Ms to the guns of Mustangs.

The 302nd Kokutai fought its very last action just two hours before Japan announced its surrender at noon on 15 August 1945. Four Raidens and eight Zero-sens took off from Atsugi to engage 250 US Navy carrier aircraft sent to attack targets on the Kanto Plain. In what proved to be the final major dogfight between IJNAF fighters and Hellcats, the 302nd’s aeroplanes bounced six F6F-5s from VF-88 as they strafed Atsugi. Although four of the Grumman fighters failed to return to the USS *Yorktown* (CV-10), the 302nd lost two Raidens and a Zero-sen.

332nd KOKUTAI

The second homeland defence unit issued with Raidens was the 332nd Kokutai, formed on 1 August 1944 from the Kure Kokutai at Iwakuni. Like the 302nd, it was initially equipped with 48 interceptors and 12 (J1N1) night fighters. Of the former, 46 were Zero-sens and just two J2Ms, both of which were unserviceable. By 1 November the 332nd’s Raiden force had increased to 15 aircraft.

As previously noted, 1 November was also the date that the first

Superfortress had appeared over Tokyo, when an F-13 overflew the Japanese capital. Realising that future opponents would be high-flying bombers rather than single-engined fighters, the Raiden pilots of the 332nd quickly changed their training syllabus. In mid-December F-13s started flying regularly over Osaka and Kobe, and the IJNAF responded by sending 11 J2Ms and nine A6Ms of the 332nd Kokutai to Naruo — a hastily-prepared landing strip converted from an

old horse racing track — on 18 December.

Four days later the kokutai at last saw combat with its Raidens when nine examples, along with eight Zero-sens, intercepted B-29s targeting the Mitsubishi aircraft plant in Nagoya. CPO Akeshi Ochi, a veteran of combat over Rabaul and Iwo Jima, succeeded in shooting down one of three Superfortresses lost by XXI Bomber Command that day. Although a malfunctioning undercarriage upon

his return to Naruo left Ochi with no choice but to force-land his J2M, he was presented with a bottle of whisky by Lt Cdr Yamashita for his success.

Following several unsuccessful attempts to engage B-29s early in the new year, the 332nd’s Raidens managed to intercept bombers striking the Kawasaki aircraft plant at Akashi on 19 January 1945. Seven J2Ms and five A6Ms dived on the B-29s in line-astern formation, observers on the ground

BELOW: On 22 December 1944, CPO Akeshi Ochi shot down a B-29. Although a malfunctioning undercarriage upon his return to Naruo left Ochi with no choice but to force-land his J2M3 (‘32-101’), he was presented with a bottle of whisky by the 332nd Kokutai’s executive officer, Lt Cdr Yoshio Yamashita, for claiming the unit’s first aerial victory. VIA YASUHO IZAWA



DATABASE MITSUBISHI J2M RAIDEN

reporting that the sheer volume of tracer fired by the gunners in the Superfortresses “was so thick that the fighters looked like doves flying over a red carpet”. Pressing home their attacks, Raiden pilots Lt Yoshio Saitoh, Lt(jg) Zenzaburo Aizawa and CPOs Saichi Matsumoto and Akeshi Ochi each claimed a bomber damaged, while Ensign Kiyomi Kuwabara damaged two.

On 4 February, 110 B-29s in three groups bombed Kobe and Matsuzaka. Again, the 332nd was in the vanguard of the defence, and this time two Superfortresses went down. Four days later, Lt Kohei Nakajima intercepted 54 B-29s targeting the Mitsubishi engine plant in Hamamatsu. Chasing his quarry west over Ise Bay, he eventually succeeded in shooting it down.

February saw Capt Takeo Shibata replaced as CO of the 332nd by Cdr Katsutoshi Yagi, who had led the 301st Kokutai upon its formation with Raidens in November 1943. A staunch proponent of the J2M, he was also a strict disciplinarian. Indeed, he frequently reprimanded his pilots when they disobeyed regulations, and transferred the much-loved Lt Cdr Yamashita out of the 332nd altogether when the

latter instructed his pilots not to engage US Navy carrier aircraft that attacked Japan on 19 March. Yamashita took this drastic step because he felt that the naval aviators in the 332nd were not experienced enough to fight their US Navy counterparts in their F6F Hellcats and F4U Corsairs.

On 25 April, following raids by XXI Bomber Command B-29s on JAAF and IJNAF airfields on Kyushu (from where kamikaze aircraft had been launching attacks on US Navy vessels sailing off Okinawa), the 5th Air Fleet transferred Raidens from the 302nd, 332nd and 352nd Kokutai to Kanoya. The 332nd's force of 17 J2Ms was led by Lt Kohei Nakajima, who claimed the combined unit's first victory — and his second — on the morning of 27 April. Diving on the bomber, Nakajima made short work of the Superfortress.

Among various other engagements, four B-29s were damaged by Lt(jg) Satoh, Ensign Susumu Ishihara and PO1c Kan-ichi Dehara on 7 May, although the latter was in turn forced to bail out of his Raiden over the sea after it was hit by defensive fire from one of the bombers. He was plucked from the water by a passing fishing boat, having first identified himself by speaking loudly in Japanese and showing the crew of the vessel the small hinomaru on his helmet.

The Kanoya-based Raidens intercepted B-29s for the last time on 10 May, when 10 of the 12 pilots led aloft by Lt Itoh of the 302nd Kokutai claimed to have damaged five bombers. Six days later the unit flew its surviving J2Ms back to Naruo.

On 25 May, control of the 332nd was assigned to the 72nd Air Flotilla, responsible for the aerial defence of western Japan. The kokutai was also boosted in strength when the 352nd Kokutai was ordered to transfer its remaining Raidens and pilots from Omura to the 332nd at Naruo.

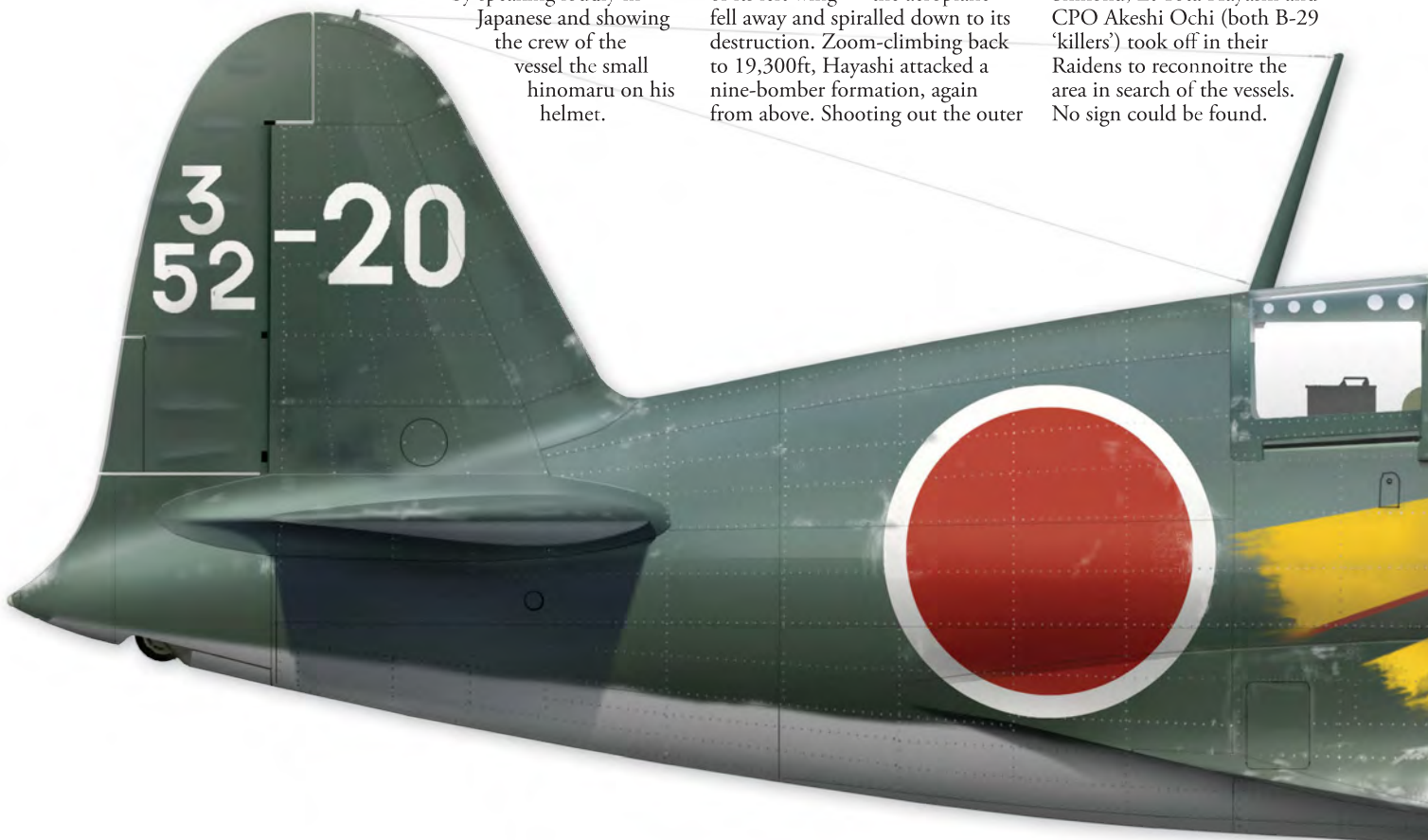
The unit next saw action on 1 June when it sent four Raidens up to defend Osaka from attack by 458 B-29s. The bombers were expecting an escort of 148 P-51s, but only 27 managed to penetrate a storm front that blocked their path from Iwo Jima during what was subsequently dubbed the ‘Black Friday’ mission by crews that participated. No fewer than 24 Mustang pilots perished when they crashed into the sea while trying to find a way through the storm.

Making the most of the limited AAF fighter presence over the target area, Lt Tota Hayashi dived on an 11-ship formation of B-29s he spotted at 16,600ft. Aiming at the lead bomber, he shot off a third of its left wing — the aeroplane fell away and spiralled down to its destruction. Zoom-climbing back to 19,300ft, Hayashi attacked a nine-bomber formation, again from above. Shooting out the outer

left engine of the leader, Hayashi felt his own aircraft shudder as it was struck by return fire from the B-29. Banking around a large cumulonimbus cloud, he fired his remaining ammunition at the lead bomber in a 12-aircraft formation. Having observed hits on its left inner engine, Hayashi was then forced to bail out of his now blazing Raiden. The damage caused by return fire from the second B-29 he had attacked split an oil line to the engine, which burst into flames.

With fuel now becoming increasingly scarce, Raiden pilots rarely flew except when scrambled to meet incoming raids. And with these being heavily protected by fighter escorts, the chances of success were even slimmer than before. Proving that the IJNAF's fighter assets were just as vulnerable to enemy attack when they remained on the ground, Naruo was bombed during the night of 5-6 August, and 10 Raidens and seven Zero-sens destroyed.

Re-assigned to the 53rd Air Flotilla in early August, the 332nd Kokutai flew its final mission under IJNAF control shortly after dawn on 17 August, when, responding to reports that the US Navy's TF 58 was nearing Shikoku, Lt Tota Hayashi and CPO Akeshi Ochi (both B-29 ‘killers’) took off in their Raidens to reconnoitre the area in search of the vessels. No sign could be found.



352nd KOKUTAI

The final unit to be equipped with the Raiden in significant numbers was the 352nd Kokutai, formed on 10 August 1944. It evolved from the Omura detachment of the Sasebo Kokutai, set up to provide fighter defence for the naval base at Sasebo in the Nagasaki Prefecture.

Like other units formed at this time, the kokutai was equipped with 48 interceptors and 12 night fighters for the defence of Sasebo, Nagasaki and Omura. It was initially equipped with 30 Zero-sens, four J1N1s and two unserviceable Raidens.

By 1 September the 352nd had 43 Zero-sens, four J1N1s and 17 Raidens, but only four of the latter were serviceable. The kokutai had been split up into three hikotai, each with a different fighter type. The Raiden hikotai had to wait until the B-29 raid against Omura on 25 October to see action, eight J2Ms being among 71 fighters scrambled by the 352nd Kokutai and the Omura Kokutai. Engaging the bombers at 26,200ft, the intercepting pilots were plagued by cannon failures and other technical malfunctions. The only Raiden pilot to make any claims was CPO Yasunobu Nabara, who was credited with two damaged — he reported that the first B-29 he attacked started belching out black smoke after his firing pass, and the second was last seen trailing white smoke.

On 21 November, XX Bomber Command attacked with 96 B-29s, the mission being detected



ABOVE: Lt(jg) Yoshihiro Aoki, second from left, briefs pilots in his division on an impending mission from Kanoya in early May 1945. Behind is one of at least two J2M3s flown by the 352nd adorned with distinctive 'thunderbolt' markings inspired by the fighter's name. VIA YASUHO IZAWA

by Japanese Army units in China, which in turn alerted the 352nd Kokutai early enough to allow it to scramble eight J1N1s, 16 Raidens and 33 Zero-sens — 10 fighters from the Omura Kokutai were also sent aloft. With time on their side for once, the IJNAF pilots were able to climb above the

approaching bomber formations closing on Omura at 25,000ft.

Thanks to the B-29s attacking at a lower altitude than had previously been the case, the Raiden pilots in particular proved very effective. WO Toshiyuki Ichiki, leader of the 2nd Buntai, claimed a bomber destroyed, as

did PO2c Susumu Tsuchiya, who was also credited with damaging a second B-29. 4th Buntai leader WO Yasunobu Nabara downed a third Superfortress, while two more were credited as damaged to other J2M pilots. The 352nd suffered its first Raiden combat fatality during this fiercely-fought engagement

BELOW: J2M3 Raiden 21 '352-20' Lt(jg) Yoshihiro Aoki, 352nd Kokutai, Omura, March 1945



DATABASE MITSUBISHI J2M RAIDEN

when PO2c Yukio Sawada of the 1st Buntai was downed.

The final raid on the home islands by China-based Superfortresses assigned to Operation 'Matterhorn' was mounted on 6 January 1945 when 48 bombers headed for Omura once again. The 352nd Kokutai scrambled 43 fighters, including 12 Raidens. The unit claimed two B-29s destroyed, eight probables and four damaged, although which aircraft and pilots were credited with what kills is not clear.

With XXI Bomber Command taking over the offensive against Japan from bases in the Marianas, the 352nd's Raiden pilots saw no action until late March. This was just as well, for like the 302nd it had lost a number of its best aviators to the newly-formed 343rd Kokutai. The unit was struggling with a lack of aircraft, the CO of the kokutai, Capt Bunzo Shibata, complaining to his superiors that of 30 Raidens assigned to the 352nd in mid-March 1945, 10 were J2M5s fitted with supercharged MK4U-4 Kasei Model 26a engines. This variant, as previously noted, had been produced specifically to

reach the high altitudes favoured by the B-29s attacking Japan. Unfortunately, the Kasei Model 26a proved prone to failure. Furthermore, flying a J2M5 at altitudes higher than 35,000ft took great skill, as did landing the fighter, for its approach speed exceeded 138mph. On a positive note, the J2M5 had an enlarged canopy that gave the pilot an improved view, a flatter forward fuselage section and four faster-firing 20mm Type 99 cannon in the wings. The 352nd had only one pilot cleared to fly the J2M5 operationally after the 343rd plundered its ranks, leading Shibata to request their replacement with J2M3s or A6M5cs.

The 352nd's Omura airfield was one of three sites targeted by B-29s on 27 March, TF 58 requesting that XXI Bomber Command knock out as many potential kamikaze aircraft in Kyushu as possible ahead of the invasion of Okinawa scheduled for four days later. A total of 161 bombers were involved, with two groups bombing Omura from 16,650ft. Eight Raidens

were among the fighters sent into action by the 352nd, the pilots waiting for the B-29s at 30,000ft. Visibility was poor, and only 10 aircraft (including four Raidens) intercepted the bombers, damaging one. The airfield was attacked nevertheless, and four Raidens destroyed on the ground.

Like the 302nd and 332nd Kokutai, the 352nd was ordered to send Raidens to Kanoya to defend southern Kyushu in late April, the unit despatching all of its serviceable examples — just seven J2Ms — on the 26th of that month. Two days later Ensign Noburo Kikuchi became the first pilot from the kokutai to make a claim from Kanoya when he was one of 12 naval aviators from the combined Raiden unit to damage a B-29. However, the 352nd's Ensign Kiyotoshi Kaneko bailed out after being badly wounded in the engagement, and Lt(jg) Toshiaki Okamoto force-landed his shot-up J2M. Lt(jg) Sadao Yamamoto was the only pilot from the unit to damage a B-29 on 30 April, the combined Kanoya Raiden kokutai claiming six damaged in total without loss.

Yamamoto was again the lone claimant from the 352nd on 3 May, his Superfortress being one of eight damaged by Raiden pilots. Two J2Ms were lost on this occasion, with Lt(jg) Isamu Nishida of the 352nd successfully taking to his parachute.

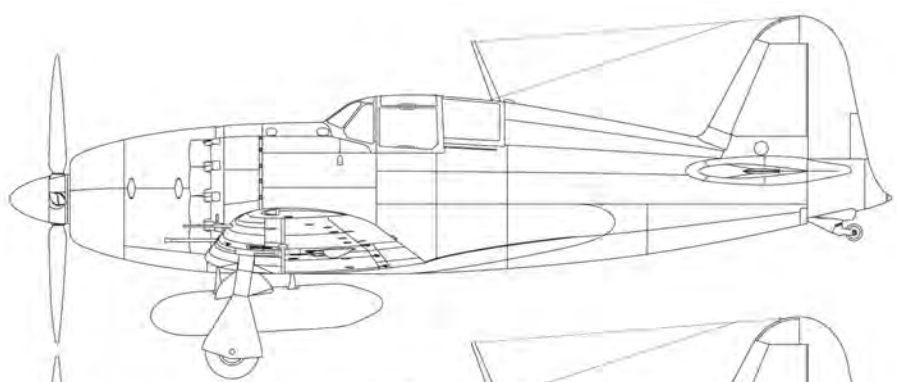
Four days later Ensign Kikuchi made his second 'damaged' claim while flying from Kanoya, his target bomber being one of five hit by Raidens scrambled from the airfield. The final claim for the 352nd during this brief deployment occurred on 10 May when Lt(jg) Okamoto was one of five J2M pilots to damage a B-29. The 302nd and 332nd departed to their home airfield shortly thereafter, although the 352nd did not return to Omura (with eight Raidens) until 3 June. By then the unit had come under the command of the 72nd Air Flotilla, and on 8 June its handful of aircraft and pilots — led by Lt(jg) Okamoto — were transferred to the 332nd Kokutai at Naruo. Shorn of its Raidens, the 352nd subsequently focused on night fighter operations until war's end.

A

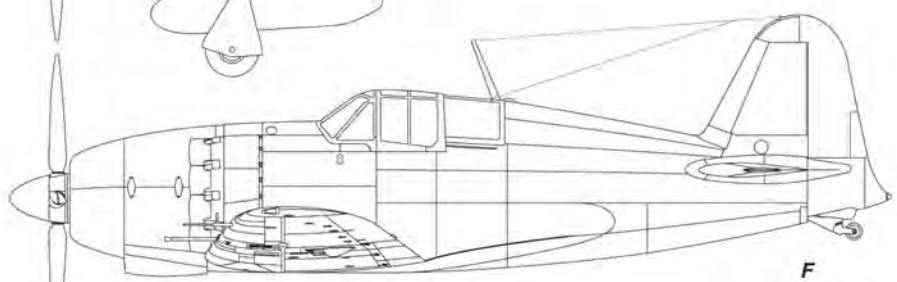
BELOW: A rare colour view of the assorted IJNAF fighters (most wearing 302nd Kokutai tail codes) abandoned at Atsugi in September 1945. Among the A6M5/7s and J2M3s are P1Y2-S Kyokko and J1N1 Gekko twin-engined night fighters. VIA DONALD NIJBOER



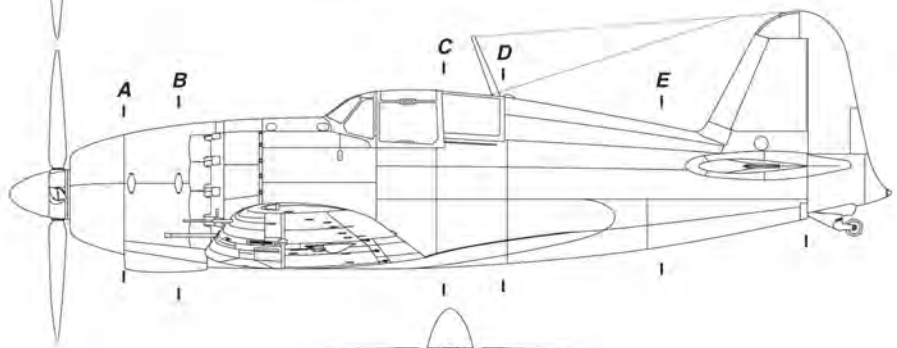
J2M2



J2M6



J2M3



A



B



C



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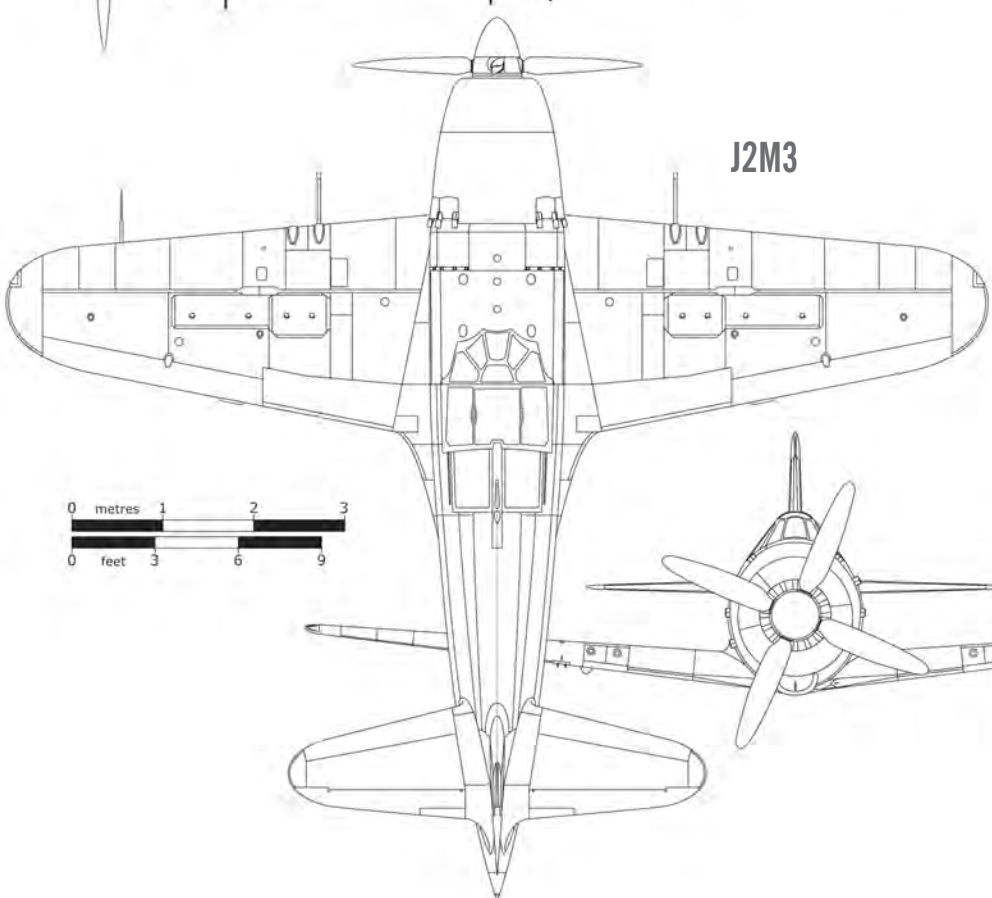


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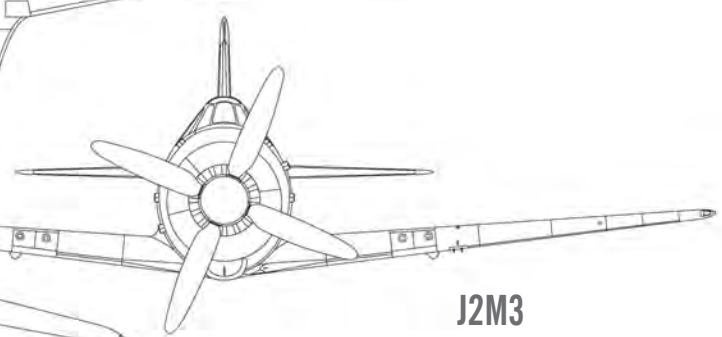


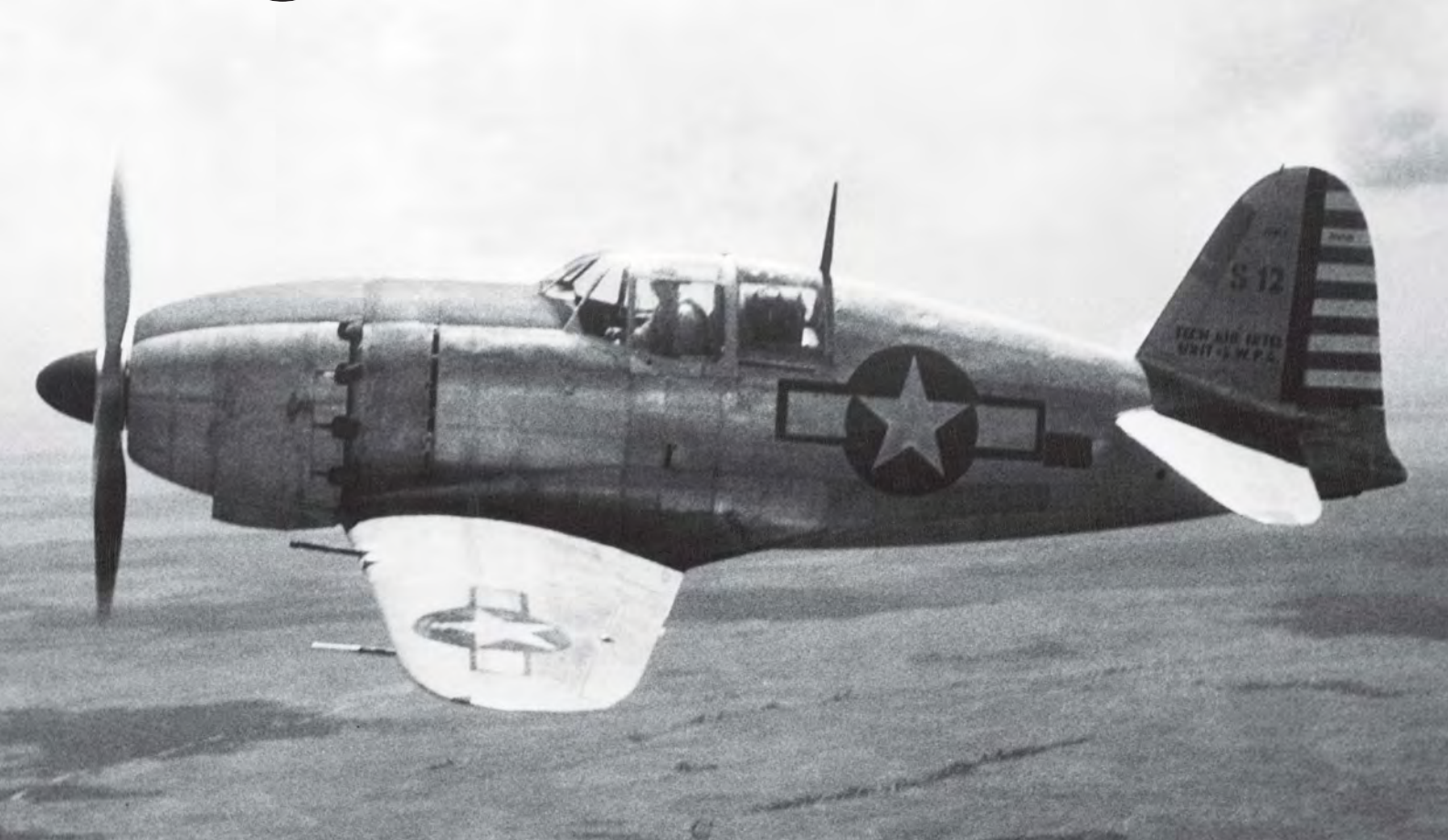
F

J2M3



J2M3





ABOVE: This J2M3 was captured on Dewey Boulevard in downtown Manila, used by the IJNAF as an emergency airstrip during the final weeks of the ill-fated defence of the Philippines. Acquired by the Technical Air Intelligence Unit (TAIU), which stripped it of its camouflage and applied US markings, the Raiden was flown twice from Clark Field. VIA PHILIP JARRETT

A US evaluation pilot's view of the Raiden, based on flying a captured example

A handful of serviceable J2M3 Raidens were captured by US forces near Manila when the Japanese were defeated in the Philippines in late 1944. Several were soon restored to flying condition and tested by American field-grade evaluation pilots, one of whom filed the following report on the aeroplane.

"Taxiing and ground handling in general are excellent, visibility from the cockpit on the ground being much better than that offered by the Nakajima [Ki-84] Hayate due to the wide cockpit canopy and more forward position of the seat. Good taxiing brakes are fitted on a British-type rudder bar, but the rudder is not very effective during taxiing and no tailwheel lock is fitted. Take-off is normal, with little tendency to swing, but the tail does not come up readily owing to the small elevators. When the tail is raised, forward vision is good. Take-off run is short and the aircraft leaves the ground readily at 100mph. There is practically no change in trim with gear retraction. Climb angle is steep and the rate of climb rapid, and the cooling of engine and oil appears to be excellent. Handling and control

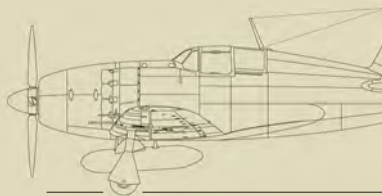
are good at all speeds from the stall up to 325mph, although the ailerons are heavy at normal cruise speeds, and become exceptionally so above 325mph. The elevators are on the light side at all speeds up to 325mph. The rudder is satisfactory at all speeds.

"Rudder and elevator trim tabs are controlled by parallel wheels in longitudinal plane on the port side of the cockpit, and the rudder control tab is ineffective, but little change in rudder trim is required. The elevator tab is adequate and very effective, but it works in reverse of Allied procedure (i.e. rolling the wheel backwards makes the aircraft nose-heavy). The aircraft is dynamically and statically stable longitudinally and directionally, and neutrally stable laterally. In short, stability is excellent. The uneven use of fuel from either port or starboard wing tanks quickly results in the aircraft becoming markedly wing-heavy.

"The aircraft was stalled clean and dirty, and stalling characteristics are excellent except for a lack of stall warning. The nose drops gently, either straight ahead or on either wing, and recovery is very rapid, with little loss of altitude. The

oil and engine cowl flaps have no noticeable effect on stalling speed, and there is no tendency to spin. Rolls, Immelmans and turns are executed with ease at normal speeds, although ailerons are heavy at all operating speeds and the aircraft cannot be rolled as rapidly as a P-51. Manoeuvre flaps of Fowler type are fitted, and are controlled by a safety switch and a trigger on the stick. These are extended only when the trigger is depressed and retract immediately the trigger is released, and their operation is superior to any used on our aircraft. The elevators are too light at normal and high speeds, and it is felt that the aircraft may be easily damaged by rough handling of the elevators.

"The engine was rough at cruising rpm in automatic mixture setting. This roughness was reduced as soon as the mixture was leaned out, but this caused the exhaust temperature to go above the limits. Vibration is not excessive, but the canopy fitted on this particular aircraft vibrates and makes considerable noise. For a normal-sized pilot the aircraft is comfortable. There is ample headroom and body room, and the cockpit enclosure is wide, permitting freedom of movement



of the head, and this improves vision. The ventilation system, which comprises forward and aft ventilators, is superior to any fitted to our fighters. The rigging of the stick and rudder is satisfactory, and all controls are readily accessible.

“The cockpit layout is, in general, very satisfactory, and the engine and flight instruments are well grouped, although the airspeed indicator is too far from the rev counter and manifold pressure gauge (this is especially noticeable during the take-off run). Intermittent noise is the only real objection to comfort. Ground observers state that the noise emitted by the cooling fan is very noticeable, but it is not heard in the cockpit. Vision in climb, level flight and for landing is good, although rather poor for take-off until the tail comes up. Aft vision is good if the rear transparency panels are kept clean, but the metal framing of the windscreen tends to obstruct forward vision.

“The powerplant is generally satisfactory. It is very easy to start, hot or cold, but, as already mentioned, runs roughly at cruising revs. Aircrew operation is satisfactory at normal revs but hunts at higher revs at about 10,000ft, although it should be noted that aircrew control on this particular aircraft had been changed from



ABOVE: The TAIU-operated Raiden in formation with a US Navy F6F-5 Hellcat and a Fleet Air Arm Seafire III. Just two flights were made by the J2M3 (totalling three hours 20 minutes) before the engine seized when the main oil delivery hose failed. The pilot completed a successful dead-stick landing – almost certainly the last of many carried out in a J2M.

hydraulic to electric, so is non-standard. Oil and engine cooling are exceptionally good, and gave the impression that they would over-heat in cold weather. It was noted that there is considerable vibration for a short period when the engine

is put into high blower at 12,000ft pressure altitude.

“In conclusion, it may be said that the favourable features of this fighter are: (1) good stability; (2) good stalling characteristics; (3) comfort; (4) good take-off and landing

qualities; (5) good performance; (6) manoeuvre flaps. Its poor features are: (1) brakes and rudder brake action; (2) heavy ailerons and lack of manoeuvrability at high speed; (3) low mechanical reliability; (4) short range.”



SOLE RAIDEN SURVIVOR



FRANK B. MORMILLO

The sole surviving Raiden is a J2M3, preserved by the Planes of Fame Air Museum at Chino Airport, California. Serial 3014 was captured by American forces at Atsugi upon the end of World War Two and taken to the US in November 1945 for technical evaluation. Thereafter

it was left abandoned in a Los Angeles park until Planes of Fame founder Ed Maloney recovered the airframe for preservation in 1958. Since fully restored, today its markings are those of a 302nd Kokutai example. *Ben Dunnell*