

# FAR EAST THUNDER

ALTHOUGH TROUBLESOME AND MAKING LITTLE IMPACT ON THE JAPANESE WAR EFFORT, THE PORTLY MITSUBISHI J2M3 RAIDEN STILL PROVED A WORTHY DESIGN, AS BARRY WHEELER EXPLAINS

**Below**  
A J2M3 Raiden of the 302nd Kōkūtai scrambles from Yokosuka, central Japan, to intercept a US bomber stream towards the end of the war. On December 3 the type contributed to the downing of six B-29s. ALL VIA BARRY WHEELER UNLESS STATED

Dewey Boulevard, now Roxas Blvd in the Philippines' capital Manila, runs for more than a mile alongside the blue waters of its bay. In February 1945, the US Army arrived at its former embassy on Dewey under the echoes of General MacArthur's promise: "I shall return!" following the Americans' hasty withdrawal in 1942. Not only did they find the residence, which had been taken over by the Nipponese military, intact, but also a rather motley collection of Japanese Naval Air Force (JNAF) aircraft parked under the tropical palms. Among them were two of the latest Mitsubishi J2M3 Raiden (Thunderbolt) fighters. Given the Allied codename *Jack*, the type was high on the priority list for assessment by the Allied Technical Air Intelligence Unit (ATAIU).

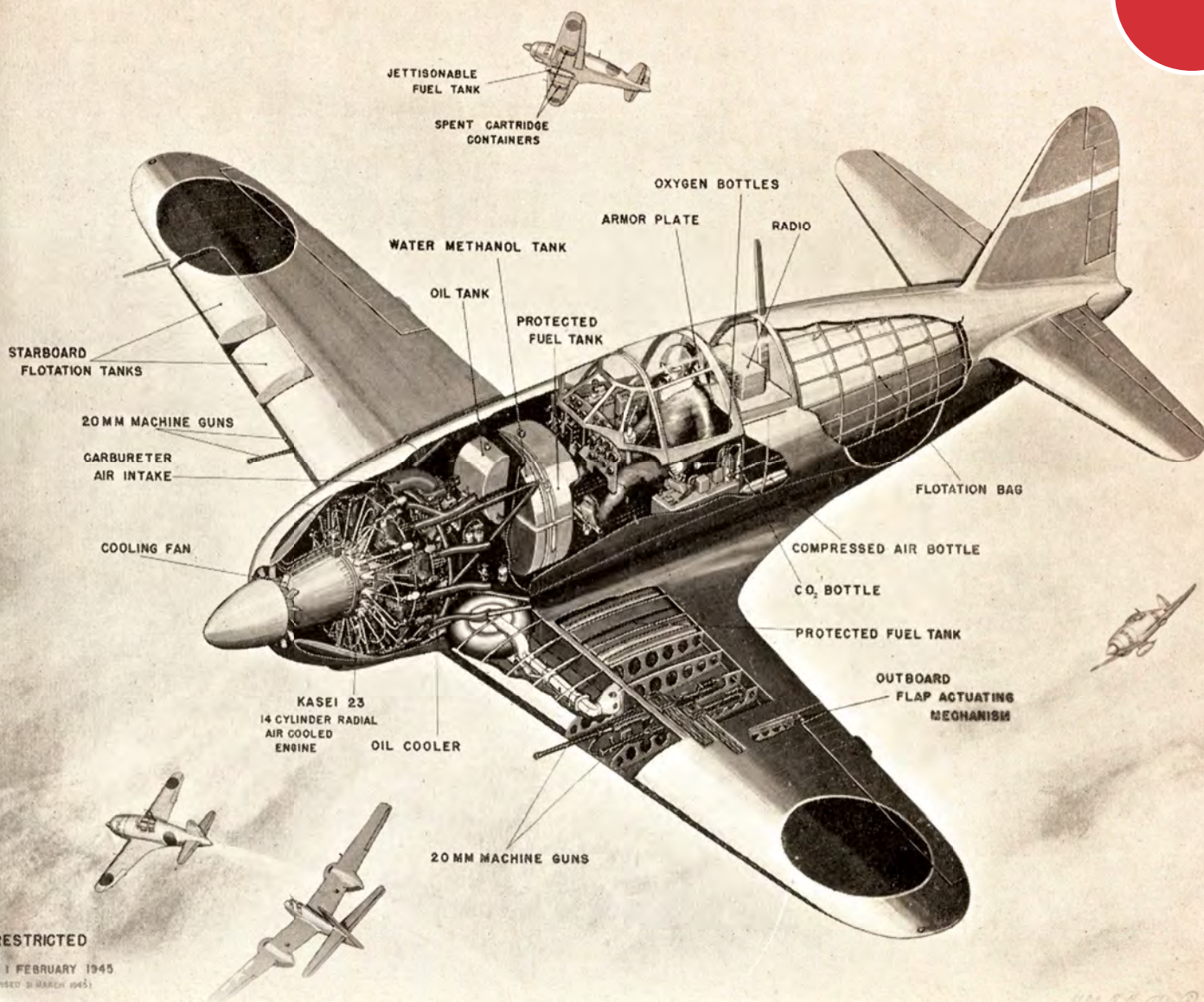
## FAVOURABLE RESULTS

The Raidens belonged to the 381st Kōkūtai (Naval Air Group) and shared the bizarre 'dispersal' with several Mitsubishi A6M5 Zero-Sen fighters of the 252nd Kōkūtai. Having been forced to leave their base at Nichols Field by heavy US bombing, the units moved north to start flying missions from the arrow-straight boulevard in a last-ditch attempt to defend Manila. Following the discovery, an ATAIU photographer was summoned to record the first close-up pictures of the coveted machines, numbered 3008 and 3013. Meanwhile, a maintenance crew was also dispatched to assess and disassemble the better of the two airframes for possible flight testing; 3008 was chosen. Moved by low-loader, the war prize was transported to Clark Field, 50 miles (81km) northeast of

Manila, where it was reassembled, the green paint removed and prominent USAAF markings applied over its natural metal finish.

Just two flights totalling 3hrs 20mins were undertaken, but the experienced US evaluation pilot was unhesitant in his opinion that the Raiden was a far better machine than other Japanese fighters such as the *Zeke*, *Oscar*, *Nick* or *Frank*. It was considered to have a satisfactory cockpit layout and with the help of the bulged canopy fitted to this later version, visibility on the ground was passable while taxiing, and good when flying. The take-off run was short, with the aircraft leaving the ground readily at 100mph (161km/h) and having little tendency to swing. Due to the aircraft's engine being relatively new, its maximum performance in certain regimes was not attempted.





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However, it was noted that its climb angle and speed were steep and fast.

Handling and control were considered respectable, although the ailerons were heavy at cruising speed and even heavier at 325mph. ‘Hands-off’ at 8,500ft and 210mph, the Raiden was a relatively stable machine. The elevator trim tab was considered adequate, however, this worked in reverse to Allied types, so rolling the wheel backwards made the aircraft nose heavy.

The Raiden’s stalling characteristics were found to be excellent, with no tendency to spin, and in a clean configuration the nose or a wing dropped at around 100mph. Combat manoeuvring flaps were fitted as standard and operated by a trigger switch on the control column. Maximum speed for their use was 320mph and they were

appraised as superior to those on allied aircraft.

Despite its many positives, the *Jack* had some weaker points – the aforementioned heavy ailerons, a lack of manoeuvrability at high speed, short range and poor mechanical reliability. The latter was proven when 3008 suffered a substantial oil leak during its second evaluation flight at 16,000ft, necessitating a dead-stick landing. It didn’t fly again.

### NEEDED IMPROVEMENT

In October 1938 the JNAF issued a requirement for a new interceptor to operate from both carriers and shore bases. The contract was given to Mitsubishi, with chief designer Jiro Horikoshi heading the team. However, with updates to the engineer’s famous A6M Zero-Sen

occupying most of the company, it was three years before the first prototype J2M1 took to the air. It showed none of the attractive lines of its predecessor. Its short, stubby wings incorporated a laminar-flow aerofoil section while its markedly wide fuselage housed a 1,460hp (1,089kW) Mitsubishi Kasei 13 engine within a closely cowled nose, driving a three-bladed VDM propeller. Armament comprised two 7.7mm Type 97 machine guns in the upper fuselage and two wing-mounted 20mm Type 99 cannon.

The first flight took place on March 20, 1942 with company test pilot Katsuzo Shima at the controls. He noted the type was stable and responsive to fly, but forward visibility was inadequate due to the curved windscreen. Needing more power to meet the navy’s

**Above**  
A cutaway produced by the Technical Air Intelligence Center at Naval Air Station Anacostia, Washington DC, following the discovery of two J2M3 Raidens in Manila during February 1945. Unknown to the Allies, the type was fitted with buoyancy tanks to keep it afloat in the event of ditching.





**"In January 1944, the 30th example disintegrated over Toyohashi airfield, east of Hamamatsu, following a firing pass"**

**Above**  
Operated by the 381st Kōkūtai, Mitsubishi J2M3 Raiden 3008 was found alongside another example and several 252nd Kōkūtai 'Zero' fighters. Sustained US bombing had forced the units to operate from the road outside the embassy in a last-ditch attempt to defend Manila.

**Right**  
Following the discovery of the Raidens, 3008 was selected by the Allied Technical Air Intelligence Unit for evaluation. It is seen here wearing USAAF markings, awaiting its first test flight in US hands from Clark Field, northeast of Manila.



**Above centre right**  
Two flights to assess the type were undertaken before a technical 'snag' grounded it. Note the previously forward-raked radio mast has been replaced by a US example.

**Right**  
Discovered after the war, this Raiden featured three rear-firing 20mm cannon in the belly to allow the attacker to continue firing once it had passed the target. It is not known if the modification was evaluated in combat.

375mph at 19,700ft specification, and the ability to reach that height in 5mins 30secs, a 1,820hp Kasei 23a powerplant was fitted to the fourth prototype, while the canopy was raised and modified with optically flat panels. The airscrew was also changed to a four-bladed type and with other adjustments, the navy accepted the type as the J2M2 Raiden II in October.

Unexpected problems are never far away with new aircraft, and the Raiden was certainly no exception. An undercarriage fault led to the loss of the second production example on June 16, 1943 and in January 1944 the 30th example disintegrated over Toyohashi airfield, east of Hamamatsu, following a firing pass. It is thought that vibration was the likely cause, with an engine panel coming loose and hitting the tail assembly.

Modifications were made, but problems continued to plague the type. Mitsubishi attempted to resolve the difficulties with the improved J2M3 Model 21, which

had a stronger wing; the armament changed to four cannon and the fuselage guns were deleted. This became the standard production aircraft with 260 being produced by the end of the war – a far cry from the 3,600 the navy wanted during 1944 alone. The J2M4 Model 24 was a further upgrade, incorporating a turbo-supercharged Kasei 23c engine, which produced a top speed of 362mph (582km/h) at 30,000ft. With two oblique-firing 20mm cannon added to the fuselage, this would have proved a potent adversary for the US Boeing B-29 Superfortress crews. However, the supercharger was problematic and led to just two aircraft being completed. The fastest version was the supercharged J2M5 Model 33, which reached 382mph at 22,310ft and had a climb performance of 26,250ft in 9min 45sec. But by then it was all too late, and just 34 were produced, taking Raiden production to a modest 476 including 21 J2M3s with underwing gun packs, and one J2M6 with further airframe changes.



### JACK'S CRUSADE

The Raiden's combat debut came towards the end of 1943 when a small number were assigned to 602 Hikōtai of Air Group 381, to provide air defence over the Balikpapan oil fields on the island of Borneo. However, by February 1944 just ten had been delivered with very little chance of further airframes arriving. When first encountered by the Allies it was believed to be an army-operated aircraft. As it turned out, the Raiden's main role was to defend the home islands and in March 1944, 14 examples arrived with the



Yokosuka Naval Air Group tasked with covering Tokyo. Meanwhile, Air Group 302 was formed at Kisarazu on the east bank of Tokyo Bay before moving to Atsugi Air Base (AB) with 48 Raidens. By February 1945, that number had fallen to 31.

In August 1944, Air Group 332 began a short period of defending the Kure area from Iwakuni AB, southeast of Hiroshima, with its initial complement of two Raidens, 12 Nakajima J1N Gekko twin-engined night-fighters and 45 'Zeros'. By November, only 15 J2M3s had been delivered. The following month, the unit transferred to Kobe where it scored its first 'kill'...

the victor, however, was a Zero. According to surviving records, the group was "singularly unlucky and achieved little success against the US bombers". Formed at the same time, Air Group 352 was assigned both day and night operations in the Sasebo, Nagasaki and Ōmura areas with a similar mix of types. When the Zeros and Gekkos flew the first missions on August 20, the unit was still waiting for its J2M3s. However, 13 are recorded as flying a daylight mission on October 25.

Raiden numbers also increased as the bombing of Japan intensified during spring 1945, but the type continued to be beleaguered by technical problems. A typical example was Air Group 352 in May 1945. Comprising 28 Zeros and 12 Gekkos, more than 75% of these were operational, yet of the 25 Raidens on strength, 20 were grounded. Most of the issues often centred on the type's problematic Kasei powerplant.

### 'SUPERFORT' NEMESIS

For US B-29 crews flying with the Twentieth and Twenty-Second Air Forces, Japanese air defence over their archipelago was mixed, as was the

early results of their raids. The first large nocturnal raid on June 14, against a steel works in Kyushu was almost a complete failure due to poor accuracy. Utilising 68 bombers flying from Chengdu in South Central China, six aircraft were lost in accidents and one was shot down. A switch to high-altitude precision bombing in early 1945 was trialled with a reduced bomb load, but the B-29s suffered from overheating engines during the long struggle to gain height. Accuracy was even more negligible. Then, in February, the pugnacious Maj Gen Curtis LeMay ordered the fire-bombing of Japanese cities at night from low level. The first attack against Tokyo overnight on March 9-10 produced the results desired by LeMay – the largely wooden city was incinerated. Minimal night-fighter opposition enabled the bombers to be stripped of most of their defensive armament.

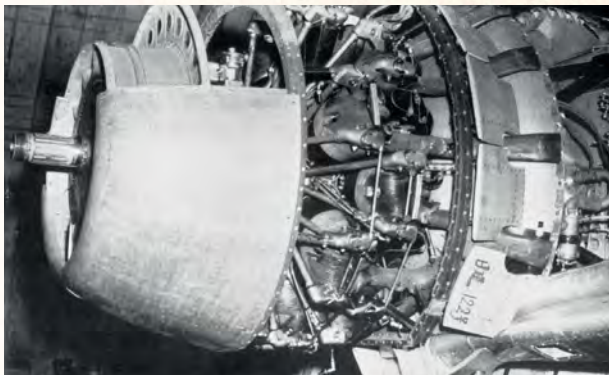
While Japanese pilots were generally critical of the Raiden being a heavy, un-maneuvrable 'beast' with a high landing speed and an oversized cowling, ➔

**Above left**  
Two long-barrelled 20mm Type 99 cannon were fitted to ensure an accurate impression of the type's performance. The Raiden was rather squat compared with its Zero predecessor.

**Above**  
Lt Goro Ichimura of the 302nd Kōkūtai in front of his Raiden sometime in 1944. He later flew the Kawanishi NIK-J Shiden with success.

**Below**  
This ex-381st Kōkūtai J2M3 Raiden wears the hastily applied acronym of the Allied Technical Air Intelligence Unit South East Asia.  
ANDY HAY/FLYING ART





**Above**  
A partially cowled J2M3 Raiden shows how the Kasei 23a engine fitted into the fighter's tapered fuselage. The aircraft was one of the few Japanese fighters equipped with a supercharger, but it often proved problematic both during trials and in service.

**Above right**  
The Planes of Fame Museum's J2M3 is the sole surviving example of the type, and is seen here having been restored for display. The aircraft was finished with yellow thunderbolts in a salute to the type's translated name.

several pilots achieved notable combat success over the Nipponese chain. On December 3, the type contributed to shooting down six B-29s intercepted by a mixed group of Zeros and Raidens over Kyushu. During other raids, numerous US bombers experienced ramming attacks by desperate naval aviators. Lieutenant (junior grade) Teimei Akamatsu of Air Group 302 proved one of the few successful exponents of the Raiden, and gained a small number of victories over the North American P-51 Mustang and equally formidable Grumman F6F Hellcat. Intercepting the massed raids, the Japanese defenders struggled to reach the bombers at 30,000ft – let alone attack them. When they managed the task, the raiders were normally

on their way home. Standing patrols were ordered to counter this, but guessing which target was next often meant the defending fighters were low on fuel when they found them. This resulted in one, maybe two, short, sharp passes through the formations before landing with near empty tanks. Following the B-29's switch to low-level night strikes, Raidens and Zeros were left to tangle with allied fighters until the atomic bombs were dropped on Hiroshima and Nagasaki in 1945.

**SAYONARA**

In a little over a year, the XX and XXI Bomber Commands of the USAAF lost 414 B-29s over Japan, although some military sources say this figure is nearer 450. Records indicate 74 fell to fighters, a further 19 to a combination of air combat and anti-aircraft fire and more than 50 to flak alone. Others succumbed to weather and mechanical failures, the majority involving the Wright R-3350 engine which had a propensity to burst into flames.

With the Japanese surrender, American units discovered several

Raidens abandoned at Atsugi, while numerous other airframes were found dumped at different locations. One curiosity was an aircraft modified for three ventral rear-facing 20mm cannon beneath the fuselage to 'spray' the target after the attacker had passed. Having already test-flown the type early in 1945, further technical assessment by the ATAIU was not a priority and four J2M3 Raiden 31s and four J3M5 Raiden 33s were transferred to the US. Of these, just one survived large-scale scrapping of Axis aircraft during the latter half of the 1940s. This is now preserved at the Planes of Fame Museum in Chino, California.

The Allied Technical Air Intelligence Unit, South East Asia, was formed at Calcutta in 1943 and towards the end of 1945, the RAF assembled a collection of captured Japanese aircraft at Tebrau, across the Johore Straits from Singapore. Among them were two J2M Raidens, coded BI-01 and 02. Flown briefly by vetted Japanese pilots, the two aircraft were eventually scrapped. ●

**MITSUBISHI J2M3 MODEL 21 RAIDEN DATA**

Type	Single-seat naval fighter (Allied reporting name <i>Jack</i> )
Crew	1
Powerplant	One 1,820hp (1,357kW) Mitsubishi MK4B-A Kasei 23a radial engine
Length	32ft 7in (9.9m)
Height	12ft 11in (3.9m)
Wingspan	35ft 5in (10.7m)
Gross wing area	216sq ft (20m <sup>2</sup> )
Empty weight	5,422lb (2,459kg)
Max take-off weight	8,700lb (3,946kg)

**PERFORMANCE**

Max speed	365mph (587km/h) at 17,380ft (5,297m)
Range	655 miles (1,054km) with 36 imp gal (164 lit) drop tank
Ceiling	38,385ft
Armament	2 x Type 99-2 inboard wing-mounted cannon, 2 x Type 99-1 outboard wing-mounted cannon, 2 x 132lb (60kg) bombs or 2 x 44 imp gal (200 lit) drop tanks or one single larger central drop tank

**JNAF Raiden Units:** Tainan Air Group, Yokosuka Air Group, Air Groups 95, 256 301, 302, 332 and 352, 602 Hikōtai of Air Group 381

**“Intercepting the massed raids, the Japanese defenders struggled to reach the bombers at 30,000ft... let alone attack them”**



This J2M3 Raiden was one a pair found abandoned outside the former US Embassy in Manila, Philippines, in February 1945 – minus its propeller and armament.