

Mitsubishi Speed Merchant

MU-2

By Rod Simpson

In the aftermath of the Second World War it was not possible for Mitsubishi Heavy Industries – a widely-diversified organisation with manufacturing activities from shipbuilding to heavy engineering – to resume its aviation activities, despite a wartime record of producing thousands of well-designed aircraft, such as the A6M 'Zero' fighter. However, in 1952 sovereignty was restored to Japan and, with postwar restrictions behind it, Mitsubishi was able to return to aircraft manufacturing and set up the Komaki factory.

It started out overhauling North American F-86s for the USAF, followed by licenced manufacture of Sabres for the new JASDF, as well as Sikorsky S-55 helicopter production and it also participated in the design of the NAMC YS-11 airliner. At the same time, it investigated markets which would allow it back into design and manufacturing of its own models.

The large airliner sector was dominated by American and European companies but a promising market was developing in business aircraft. The Lockheed Jetstar and North American Sabreliner promised a new business jet future while the Beechcraft Queen Air was meeting the needs of smaller companies. By 1958 it was clear that turbine engines would predominate and Beech was about to launch the King Air 90, based on the pressurised Queen Air 88, but fitted with Pratt & Whitney PT6A turboprops.

Design of the MU-2

Mitsubishi's turboprop twin, the MU-2, was really the first aircraft designed from the outset

Above: The Solitaire was the ultimate version of short-fuselage MU-2. Below: JA8626 was MU-2A c/n 003 and was one of only three aircraft equipped with pylon-mounted Turboméca Astazou engines (Illustrations from Author's Colln)



for turboprop power and it had similar accommodation to the King Air with a four-seat cabin, plus two crew in the front. It had a circular-section fuselage with a pressurised and air-conditioned cabin, retractable tricycle undercarriage and large, 130-USG (492-litre) wingtip fuel tanks. The high wing provided very easy cabin access for passengers and crew through a port side door directly underneath the wingroot, and the wing itself featured unusual manoeuvring control by retractable spoilers in place of conventional ailerons.

Fresh out of the San Angelo factory and awaiting painting as N4SP is MU-2B-20 c/n 199, in initial test markings N119MA



This allowed the aircraft to have full-span Fowler flaps to facilitate low approach and landing speeds and short take-offs, yet be capable of very high-speed performance, cruising at over 280 kt (322 mph, 519 km/h) compared with the 234 kt of the King Air.

Mitsubishi faced the same issues as other manufacturers when it came to the power plants. The first choice was Turboméca's Astazou, which the ill-fated Handley Page would also select for the Jetstream and would give a similar power output to the PT6As used on the King Air. Positioned on small pylons beneath the wings, they were the 562-shp (419-kW) Astazou I1K, which was a constant-speed engine with power output regulated by variable-pitch propellers.

Prototype construction started in 1961 and, on 13 September 1963, the first of three MU-2A flying prototypes (JA8620) made its first flight. The first aircraft did not have wingtip tanks but these were added on the second MU-2A (JA8625). A further two static test airframes were also produced. Testing of the MU-2 was quite straightforward and proved the aircraft's excellent performance, but it was clear that the main prize was the North American market—and Mitsubishi judged, accurately, that a French power plant would not appeal to American customers.

Consequently, the Turboméca engines were soon abandoned and the production MU-2B would be fitted – directly onto the wings – with 605-shp (451-kW) Garrett TPE331 turbines having three-blade Hartzell propellers. The fourth flying airframe, (JA8627, c/n 004) took to the air on 11 March 1965. This MU-2B had essentially the same airframe but the wingspan was increased by 3 ft 3 in (1.00 m).

Type Approval

Mitsubishi applied for certification on 25 November 1964 and the FAA Type Certificate A2PC for the MU-2B was issued on 4 November 1965. Mitsubishi then entered into a marketing and production agreement with Mooney which resulted in early production MU-2s being delivered to Kerrville, Texas, for sale in the United States. This arrangement was unsatisfactory although Mooney did bring useful input on improvements to the finish, furnishing and soundproofing of the aircraft.

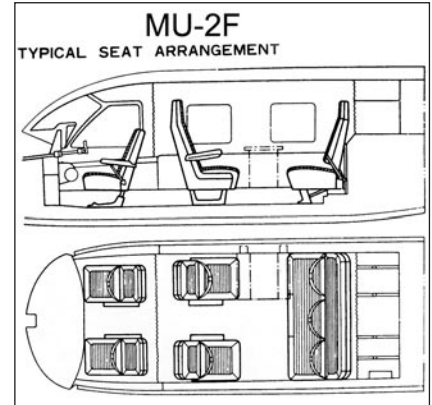
In the end, Mitsubishi broke away from Mooney and established Mitsubishi Aircraft International Inc at San Angelo, Texas. This factory received 'green' MU-2s from Nagoya for completion, adding a high level of American input including electronics and furnishing, and it handled all western hemisphere customer sales and support.



Market Success

Mitsubishi was soon seeing market success due to the excellent performance of the MU-2 and, while it could be demanding to fly, it had clear advantages over its competitors. Mitsubishi marketed it as the "Speed Merchant" and was able to claim the MU-2 was just as quick as a business jet over stage lengths of 300 to 750 miles (483 to 1,207 km) while delivering turboprop fuel economy—which was very important during the fuel crisis of the early 'Seventies. With a 1970 equipped price of around \$450,000 it was \$250,000 cheaper than a similarly-equipped Cessna Citation.

SE-EDM was a very early MU-2B (c/n 011) delivered to Germany. It eventually returned to the USA, but was retired in 1985



MU-2s were very attractive to small American companies and early customers included the Fox Grocery Company, the Carolina Tire Company and Pay'n Pak Stores, although large operators such as Tenneco and Fabergé also acquired aircraft. Outside the USA, MU-2s went to Canada, Mexico and Brazil. Deliveries totalled seven in 1967, 14 in 1968, 49 in 1969 and 44 in 1970.

Mitsubishi kept refreshing it with new variants. Initially, there was the MU-2D with TPE331-25AB engines, but it was weight limited in some circumstances. With all seven seats occupied it could not carry full fuel. Consequently, it was soon replaced by the MU-2F which had more powerful -151A engines allowing a 570-lb (259-kg) increase in gross weight up to 9,920 lb (450 kg). Earlier MU-2Ds could be retrofitted with these engines as the MU-2DP.

The MU-2F was one of the most popular short-fuselage variants, with a range of 1,640 miles (2,640 km) and a 340-mph (547-km/h) cruising speed. It was replaced by



Above: MU-2B N460FS (c/n 280) is seen landing at Lakeland in April, 2008. Below: Nyge Aero had a batch of eight MU-2Bs for target towing, this one being SE-GHB (c/n 287)



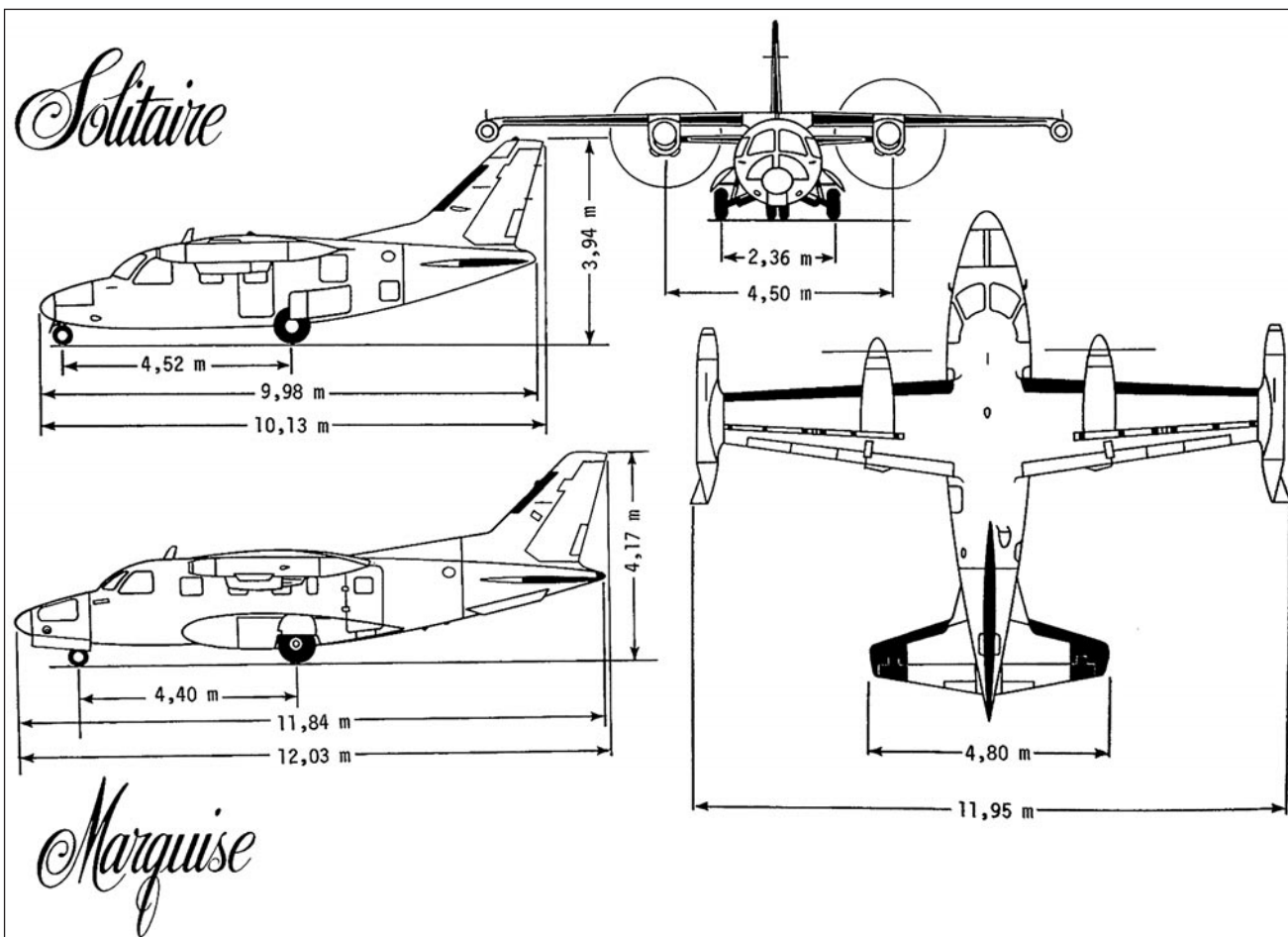
Flying in the MU-2

Flying in the MU-2 was a memorable experience. I had flown in King Airs and a Turbo Commander, but in early February 1971 I had to spend a day giving marketing advice to Mitsubishi Aircraft International at its San Angelo, Texas, base. At 8:00 AM on a frosty morning it was out across the ramp at Oklahoma City to the company demonstrator MU-2F, N107MA with Bill Stinson, Mitsubishi's Chief Pilot. Veteran Bill, in an earlier career at Cessna, had piloted the Cessna 310 on its maiden flight. The MU-2 was covered in frost and I was surprised when Bill just went to the windshield and scrubbed off a small patch; then we climbed in and he went through the startup routine. The small patch was only enough to see the taxiway *en route* to the runway, but my pilot was undeterred.

All lined up and rolling, we rapidly rotated and, amazingly, all the rime ice peeled off and full vision was restored. The MU-2 was up to 25,000 feet in no time and I settled into the cabin four-place 'club' seating for an all-too-brief, 55-minute flight to San Angelo. It was quiet, had large windows and was very comfortable. Back up in the co-pilot's seat for the landing, the MU-2 felt like a fighter jet as it turned final. A far cry from the sedate King Air I had been in the previous week.

The triangulated undercarriage soaked up the landing—and I was headed to the company hangar to start a day's work. The return journey was somewhat less luxurious. A Texas International DC-9 to Dallas and then a Braniff '727 back to home in Wichita. What better demonstration of business aviation could there be? –RS





the MU-2K which had even more powerful TPE331-6-251M engines with a further small weight increase and clearance to carry up to seven passengers and two crew.

Further short-fuselage versions were the MU-2M, having a number of changes to trim and equipment and the MU-2P which was 25% quieter, thanks to a new gearbox allowing the new four-blade propellers to turn at 80% of the previous speed. The final variant was the Solitaire, distinguished by more fuel capacity, 1,000 shp (746 kW) TPE331-10-501M engines de-rated to 727 shp (542 kW) giving better performance, and an increase in operating altitude.

Stretched MU-2G

The MU-2B was joined by the stretched MU-2G. It had two fuselage plugs, fore and aft of the wing, and the cabin door (while still to port) was repositioned behind the wing. With a gross weight increase of 1,000 lb (454 kg), the overall length was increased by 6 ft 3 in (1.90 m) which completely changed the cabin interior. More space was created by external main undercarriage housings; the business-class cabin could be fitted with two more seats; and there was space in the rear for a lavatory.



Alternatively, there could be seats for nine passengers and two crew in a commuter configuration. Initially, the MU-2G had the same 665-shp TPE331-151A engines as the MU-2F so the performance was a bit less than the MU-2F, due to the higher weight.

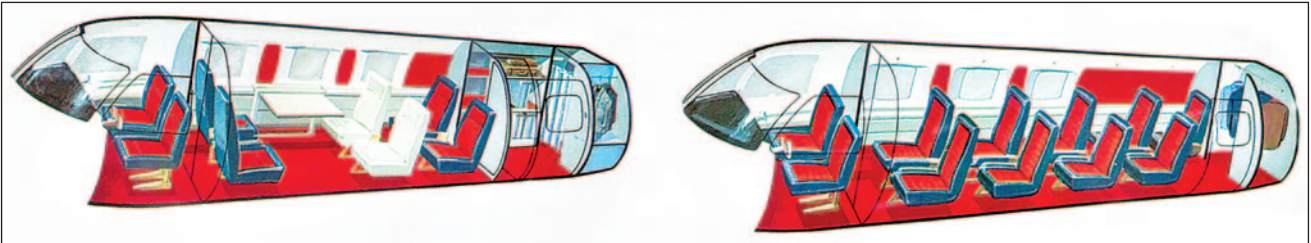
The Nagoya factory took two partly-built MU-2F airframes off the production line (c/n 152 and 153) to become the MU-2G proto-

Above: Seen while visiting St Petersburg, Florida, in April, 2017 is former Italian Solitaire, N19GA (c/n 454SA)

types (c/n 501 and 502, JA8737 and JA8502), the first of which flew on 10 January 1969. The MU-2G was approved in July 1969 but it was soon replaced by the MU-2J which had more powerful 724-shp (540-kW) engines. There-



The longer fuselage of the MU-2G is evident on N154WC (c/n 509)



after, came a succession of new variants with weight increases and further upgraded TPE 331 engines. The ultimate MU-2B-60 was known as the Marquise with TPE331-10 engines – allowing it to cruise at 31,000 ft – improved furnishings and Collins Pro Line avionics.

Military and Special Missions

Most sales were to the USA, but a special variant was developed for the JGSDF (Ground Self-Defence Force) in Japan and it first flew on 11 May 1967. This MU-2C was non-pressurised for use in communications and reconnaissance roles. Nine, designated LR-1, were ordered initially, later increased to 20, with the first delivery taking place on 30 June 1967 (JGSDF serials 22001 to 22020). As first designed and flown, it differed from the commercial model in having a fuel tank in the rear fuselage instead of the normal wingtip tanks.

Originally, the specification included external lower fuselage fairings to house vertical and oblique cameras and the LR-1 could also be fitted with a SLAR (Sideways-Looking Airborne Radar), a pair of 13 mm guns in the nose and a variety of bombs and rockets. In fact, the JGSDF never used the aircraft in this form. It was redesigned for production with wingtip tanks and used mainly for communications.

Japan's Air SDF also acquired a batch of 29 MU-2Es which were needed for search & rescue, serialled 3201 to 3229 (with a rolling fiscal year prefix, eg 73-3201). The first of these flew on 15 August 1967 and they were also unpressurised but had an increased gross weight and more fuel. Wingtip tanks allowed cabin space to be maximised. Designated MU-2S, they were fitted with a 'thimble' nose radome and bulged observation windows, while a sliding cabin door provided the ability to air-drop a small lifeboat. Eventual retirement came in late 2008.

In addition, four examples of the long-fuselage MU-2J were acquired for general transport (53-3271 to 93-3274). Mitsubishi was barred from selling the MU-2 to foreign military users but a few commercially available aircraft did go to overseas forces, notably to Mexico, the Dominican Republic the Democratic Republic of the Congo— and to New Zealand where four were taken into service as the MU-2 Sumo.

While most civil MU-2s went to corporate users there were many employed in utility

Below: One of the MU-2S Search and rescue aircraft, 23-3213



Above are alternative internal layouts of the MU-2G with the standard, six-passenger version on the left and a nine-seat commuter layout on the right. Below: The Mitsubishi Marquise (MU2B-60)



The MU-2 was widely used by the Japanese military forces. Above is an unpressurised LR-1 (22016) of the JGSDF and, below, another LR-1, 22019, in a rather more colourful paint scheme



roles. In Sweden, Nyge Aero was one of the largest operators with a fleet of yellow MU-2Ks fitted with wing pylons to carry aerial targets for military combat practice. They were also used for electronic warfare training. Following corporate service, a large number of MU-2s – mostly the long-fuselage models – were converted for package freight business with blanked-out windows. Charter operators absorbed some and others were used for aerial survey and as medevac aircraft in Canada and elsewhere.

End of Production

Mitsubishi enjoyed a period of good sales for the MU-2 with the majority of deliveries going

to American corporate customers. The aircraft was noted for its very distinctive external noise levels and several attempts were made to improve this, including fitting of sophisticated propellers. Many other upgrades to avionics and the autopilot are also popular.

However, more seriously, it gained a questionable reputation for its unusually large number of fatal accidents—probably because of its demanding handling characteristics. An FAA Review eventually exonerated it, putting the accidents down to inadequate pilot training, but this sounded the death knell of MU-2 production. Mitsubishi started to reduce the build rate and the last of 767 MU-2s left the production line at the end of 1983. In 2023 there were about 180 MU-2s shown on the US Civil Register (of which 76 were the long-fuselage version) and many more are still flying elsewhere.

In total, 767 MU-2s of all models, including prototypes, were completed and c/ns 1570SA to 1576SA were allocated but not completed at the end of the production run. Serial numbers were within the ranges c/n 001 to 038, 101 to 466, 501 to 820, 901 to 929 951 to 954 and 1501 to 1569. While these totalled 825 airframes 58 of them were converted to later models (mainly LR-1s) with new serial numbers. Up to c/n 347 the aircraft were a mixture of MU-2B, MU-2C, MU-2D and MU-2F models and from c/n 348 civil model serials were suffixed "SA" (eg c/n 348SA) although the military MU-2C and MU-2S did not have this suffix.

Long-fuselage MU-2Gs started with the prototypes c/n 501 and 502 and continued from c/n 503. They also picked up the SA suffix at c/n 689SA and ran on to c/n 799SA. The batches c/n 801 to 818 and c/n 901 to 955 were all military MU-2C, MU-2S and MU-2J aircraft which were originally allocated numbers in the normal production runs and then re-serialised. The final batch of civil Marquises was serialised c/n 1501SA to 1569SA.

MU-2 Variants

Type Number	No. Built	Notes
MU-2A	3	7/9-seat, high-wing, pressurised business twin with retractable tricycle u/c and two underslung 562 shp Turboméca Astazou I1K turboprops. Prot. JA8620 FF 14 Sep 1963
MU-2B	33	MU-2A with numerous systems and internal changes and two Garrett TPE331-25A turboprops. 8,930 lb TOGW. Prot JA8627 (c/n 004). FF 11 Mar 1965
MU-2C	20	Unpressurised MU-2B for JGSDF. FF May 1967
MU-2D	18	MU-2B with 9,350 lb TOGW and internal improvements
MU-2DP	2	MU-2D with 665 hp TPE331-1-151A engines
MU-2E		MU-2C for JASDF with nose radome, electronic search equipment, sliding cabin door and observation windows. See MU-2S
MU-2F	96	MU-2DP with larger wingtip tanks, 9,920 lb TOGW and systems changes
MU-2G *	47	9/11-seat MU-2B with 1.9 m fuselage stretch, 10,800 lb TOGW, two more windows each side, lavatory, larger vertical tail, rear door, external u/c fairings and 665 shp TPE331-1-151A engines. Prot JA8737 (c/n 501) FF 10 Jan 1969. Some designated MU-2B-30F
MU-2J *	111	MU-2G with 724 shp. TPE331-6-251M engines and improved soundproofing
MU-2K	75	MU-2F with 724 shp TPE331-6-251M engines
MU-2L *	46	MU-2J with 11,575 lb TOGW and improved internal trim. Some designated MU-2B-36F
MU-2M	27	MU-2K with 10,470 lb TOGW and improved internal trim
MU-2N *	25	MU-2L with quieter 776 shp TPE331-5-252M engines and new, low-rpm gearbox, 4-blade props and new interior
MU-2P	39	MU-2M with engines and modifications as MU-2N
MU-2S	29	MU-2E for Japanese military search and rescue role. See MU-2E
Marquise*	139	MU-2N with 778 shp TPE331-10 engines, 11,575 lb TOGW, increased fuel capacity
Solitaire	57	MU-2P with 10,450 lb TOGW and modifications and engines as on Marquise

* long-fuselage variant



Above: 73-3272 is one of four long-fuselage MU-2Js operated as general transports by the JASDF. Left: The MU-2 reached most parts of the World and 5Y-MUZ is a Marquise (c/n 756SA) seen here at Nairobi-Wilson in October 2013



The different MU-2 types were all certified as variants of the basic MU-2B and given an appropriate type number. However, a separate marketing designation was also used and this incorporated a sequential suffix letter as shown in this table:

Model	Designation	Approved	Engines (x 2)	TOGW lb	Model	Designation	Approved	Engines (x 2)	TOGW lb
Short Fuselage					Long Fuselage				
MU-2A			Astazou 11K		MU-2G	MU-2B-30	14.7.69	TPE331-151A	10,360
MU-2D	MU-2B-10	20.1.67	TPE331-25AB	9,350	MU-2J	MU-2B-35	28.5.71	TPE331-6-252M	10,800
MU-2DP	MU-2B-15	15.8.68	TPE331-151A	9,350	MU-2J	MU-2B-35	20.1.76	TPE331-6-251M	10,800
MU-2F	MU-2B-20	16.5.68	TPE331-151A	9,920	MU-2L	MU-2B-36	23.7.74	TPE331-6-252M	11,575
MU-2K	MU-2B-25	16.6.72	TPE331-6-252M	9,920	MU-2L	MU-2B-36	9.3.76	TPE331-6-251M	11,575
MU-2K	MU-2B-25	20.1.76	TPE331-6-251M	9,970	MU-2N	MU-2B-36A	12.1.77	TPE331-5-252M	11,575
MU-2M	MU-2B-26	23.7.74	TPE331-6-252M	10,470	Marquise	MU-2B-60	2.3.78	TPE331-10-501M	11,575
MU-2M	MU-2B-26	9.3.76	TPE331-6-252M	10,470					
MU-2P	MU-2B-26A	12.1.77	TPE331-6-252M	10,470					
Solitaire	MU-2B-40	12.1.77	TPE331-10-501M	10,470					