



Sabre to Mirage

Reflections on an earlier RAAF fighter transition

With the fifth-generation F-35A Lightning II waiting in the wings and time soon to be called on the venerable F/A-18 classic Hornet, it is timely to reflect on how the RAAF effected previous fighter transitions. Subsequent articles will examine the shifts from the Mirage to the Hornet, and from the Hornet to the Lightning.

The transition from the Australian-built CAC Avon Sabre to the French-designed (but Australian-assembled) Dassault Mirage IIIO involved a huge advance in capability, from a day fighter – albeit an outstanding high altitude gunfighter – to an all-weather tactical fighter.

And while some operational profiles were carried over from the Sabre to the Mirage, especially when the sun was shining and the sky was blue, there was nothing in Sabre operational doctrine which compared with flying intercepts at low level, at night, over the thunderstorm-riddled Malacca Straights. Nor of flying all-weather, low-altitude night strike missions utilising the capabilities of the Cyrano II ground mapping radar, the Doppler navigation set, and the aircraft's grid navigation system.

Dassault had designed a formidable fighter platform, as RAAF test pilot Squadron Leader Bill Collings demonstrated during tropical trials at Darwin in February 1964, when he took Mirage A3-1 to Mach 2.198 at 53,000ft and Mach 1.3 at 77,000ft.

The Mirage had an advanced integrated weapons system, albeit of analogue technology. The heart of this was a twin-gyro platform reference system which in the air-to-air mode linked the Cyrano IIA radar, the Matra R530 all-aspect semi-active radar missile, and the various facilitating (analogue) computers. To this was added the air-to-ground modes of the Cyrano IIB radar and a Doppler-based grid navigation system.

The Mirage's flight controls also

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● A line-up of 20CU (and one 77SQN) Mirage IIIO aircraft at Williamstown. DEFENCE



included an analogue fly-by-wire mode which, when engaged, facilitated attitude hold, height lock, and heading hold, as well as reducing “transonic tuck”, an abrupt nose-up pitch when decelerating from supersonic speed.

Ground school for the Mirage was a world away from the simplicity of the Sabre, generating the occasional cry from students, “we only need to learn how to fly the Mirage, not build it”. But their pleas were to no avail as “know your equipment” has always been a hallmark of RAAF aircrew training.

Because the first 50 Mirage IIIO(F) aircraft had only an air-to-air capability, the RAAF initially converted Nos 75 and 76 Squadrons as air defence only units. When No 3 Squadron began receiving its Mirage IIIO(A) aircraft, with the Cyrano IIB radar, Doppler and supporting ground-attack systems, it was designated as an 80/20 ground attack/air defence unit, with a remit to develop the RAAF Mirage air-to-ground operational doctrine, related tactics and weapons expertise.

Simultaneously, No 2 Operational Conversion Unit conducted the largest fighter combat instructor course since the course's inception, with No 10 FCI Course having six students flying the Sabre and six flying the Mirage. The lessons from both 3SQN's ground-attack prioritisation and 20CU's fighter combat instructor course were fed back into the Mirage operational conversion syllabus and the operational Mirage

squadron categorisation scheme.

The Sabre to Mirage transition placed a huge load on 20CU as the unit was also required to conduct the introductory fighter weapons courses on the Vampire trainer, Sabre operational conversions, and maintain a de facto Sabre squadron known as ‘20CU Transition Squadron’. In March 1970, the RAAF concluded such tasking was excessive, and those three responsibilities were spun off into a new unit, No 5 Operational Training Unit, whose heritage traced back to World War 2.

While the fighter force was in transition, the RAAF was also required to maintain two operational fighter squadrons at Butterworth, Malaysia, as part of the Commonwealth Strategic Reserve, and to convert those units from the Sabre to the Mirage. Additionally, Nos 75 and 76 Squadrons had to upgrade their Mirages from air defence fighters to all-weather tactical fighters. Further demands were placed on the fighter community through a commitment to train Malaysian and Indonesian personnel prior to the gifting of refurbished RAAF Sabres to Malaysia and Indonesia.

And while all this was going on, outside the fighter force the RAAF was introducing Iroquois helicopters and Caribou STOL airlifters (both of which were immediately deployed to the Vietnam War), C-130E Hercules transports, P-3B Orions, and Aermacchi MB-326H advanced trainers, and not too far away was the most complex aircraft the RAAF had ever operated to that time, the F-111C.

It's fair to say that, in the face of considerable institutional challenges, the transition of the RAAF fighter force from the Sabre to Mirage was a job very well done. ▣

Air-Vice Marshal Brian Weston (Retd) flew the Jet Provost, MB-326H, Vampire, Hunter, Sabre, Mirage and Hornet during his RAAF career.