ADF Serials Telegraph News

News for those interested in Australian Military Aircraft History and Serials

Volume 8: Issue 5: Summer 2018: *Editors and contributing Authors: John Bennett and Gordon R Birkett*

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question@adf-serials.com.au or https://www.facebook.com/groups/233552413412953/

News Briefs

21/22 September 2018 – end of BAE training contract. BAE Systems at Tamworth marked the end of their ADF pilot training contract with a flypast of 15 CT4s. Training will continue at a lower rate until mid-2020, by which time all basic Service training will be at RAAF Base East Sale. BAE has been training at Tamworth for 27 years.

BAE's VH-ZCT (ex A19-058) has been operated at Tamworth since 2011

Some of BAE's "retro" schemes

VH-YCK, VH-YCA, VH-YCU and VH-YCW as "A19-095" (not ex RAAF) over Tamworth the Parrot Party - 21 Sep 2018 (Dept Defence pics)

VH-YAB, VH-YCD, VH-YCF, VH-PGH, VH-YCE and VH-YCS over Tamworth the Parrot Party 21 Sep 2018

Not really RAAF, but an interesting CT/4B "A19-104" VH-YCH c/n 104 operated by BAE Systems Tamworth since 2005

Sep 2018. The 'Austalian Military Sales Catalog' was released by Minister Pyne, and advises of the release 62 PC-9/A trainers from 2018, with the bulk from May 2019. These aircraft are aimed at overseas military customers. Two have glass cockpits, and four are configured as FAC aircraft, so it would appear that Expressions of Interest will not be sought from the local GA market.

SEP 2018: At last, A47-008 has emerged from storage at Boeing's Renton facility and is being prepared for delivery. A47-008 had first flown on 28 FEB 2018 but as deliveries were running early and 92 WG at RAAF Edinburgh had been under the pump, the aircraft remained in storage at Boeing Renton.

A47-008	N872DS	63191	6750	Stored at Renton, due delivery shortly.

Note that our aircraft are commercial acquisitions and do not have BuAer numbers – contemporary USN aircraft are Bu 169341 (msn 63190, N869DS) and Bu 169342 (msn 63192, N874DS).

30 September 2018: An USMC F-35B belonging to Marine Fighter Attack Training Squadron 501 (VMFAT-501) stationed at Marine Corps Air Station Beaufort crashed in the vicinity of Beaufort, South Carolina, at approximately 11:45am local time. The US Marine pilot safely ejected from the single-seat aircraft. More than 320 F-35s are currently in service, and have accumulated more than 155,000 flight hours. This is the first air loss since the program was started. Australia currently has received in the United States, 10 of it 72 F-35A aircraft ordered.

3 October 2018: Project Land 2097 Phase 4; Australia's Defence Capability Acquisition and Sustainment Group issued a request for information for at least 16 special operations support helicopters.

Requirements include optimization for use in dense urban environments, capable of rapid deployment by the Royal Australian Air Force's C-17A airlifters, and the ability to be fitted with simple and proven intelligence, surveillance and reconnaissance equipment and weapons. The helicopters are intended for use by the Australian Army's 6th Aviation Regiment, based at Holsworthy, south of Sydney, and will complement a squadron of larger NHI MRH-90 Taipan helicopters.
The Taipans are replacing the 6th Aviation Regiment's existing Sikorsky S-70A-9 Black Hawk, beginning in January 2019. In service date for Phrase 4 aircraft will be in 2022.

3 October 2018: Australian Defence Force provided support the United Nations peacekeeping efforts in the South Sudan with a 36 Squadron RAAF C-17A Globemaster (A41-208) deploying a Vietnamese military field hospital to the UN mission in South Sudan. An ADF contingent of around 25 personnel are currently deployed to the United Nations Mission in South Sudan (UNMISS), known as Operation Aslan.

4 October 2018: The United Kingdom confirmed that it was in discussion with Boeing and the Royal Australian Air Force about the potential for the E-7 Wedgetail Airborne Early Warning and Control aircraft to replace its current Sentry fleet.
Australia has had Wedgetail aircraft deployed in the Middle East since October 2014 in support of operations against ISIL, with the aircraft achieving a 98 per cent mission success rate.

17 October 2018: Roulettes PC-9 and PC-21 flyover Canberra
An exciting new look for our iconic PC-21 RAAF Roulettes was unveiled in Canberra.

Starting next year, all pilots for the Navy, Army and Air Force will commence their training at East Sale as part of the new Basic Flight Training School (BFTS). The new look Roulette scheme has not been met with enthusiasm by many of our readership!

A54-019, A54-020, A54-002 at Canberra 17 OCT 2018

Roulette scheme comparison - A54-019, A23-050, A23-025 pose at Canberra

22 October 2018. Finally after the extended European summer holidays, our next pair of PC-21s in Roulette colours – **A54-021 (HB-HWU) and A54-022 (HB-HWV)** – left Stans on 14 September, and arrived at East Sale on 24 September.

The next pair, the Roulettes' **A54-023 (HB-HWW)** and **A54-024 (HB-HWX**), then arrived on 22 October. We anticipate that the next pair, **A54-025 (HB-HWY)** and **A54-026 (HB-HWZ)**, should arrive on 26 November.

The 24 Sep 2018 'Roulette' 2018 pair – A54-021 (HB-HWU) taken on 6 SEP, and A54-022 (HB-HWV) taken 10 SEP.

A54-021 HB-HWU 6 SEP 18 at Stans on final shakedown for the delivery ferry

RAAF Serial	Ferry Reg	msn	Delivery Details
A54-021	HB-HWU	254	Noted at Stans 24th May 2018 **(Roulettes)** ready for final assembly, dept Stans 14 SEP, arrived ESL 24 SEP 18.
A54-022	HB-HWV	255	Noted at Stans 26 FEB 2018 **(Roulettes)** leaving paint shop; ready for final assembly 8 MAY. Dept Stans 14 SEP, arrived 24 SEP 18.
A54-023	HB-HWW	256	Seen at Stans 24th May 2018 **(Roulettes)** with A54-021, ready for final assembly. Outside hangar first time on 21 JUN for engine runs, departed Stans 12 OCT, arrived ESL 22 OCT 18.
A54-024	HB-HWX	257	Seen at Stans JUN 2018 **(Roulettes)**. Departed Stans 12 OCT, arrived ESL 22 OCT 18.
A54-025	HB-HWY	258	Flight test **(Roulettes),** anticipate arriving ESL on 26 NOV 18.
A54-026	HB-HWZ	259	Flight test **(Roulettes),** anticipate arriving ESL on 26 NOV 18.
A54-027	HB-HWA	260	Seen 10 SEP 18 **(Roulettes)** Stans for pre fight checks.
A54-028	HB-HWB	261	**(Roulettes)** first flight 26 SEP 18, in flight test at Stans.
A54-029	HB-HWC	262	Seen 5 OCT 18 **(Roulettes)** Stans for first engine runs.

23 SEP 2018: A54-021 (HB-HWU) and A54-022 (HB-HWU) at Adelaide

21 OCT 2018: A54-023 (HB-HWW) and A54-024 (HB-HWX) transit Adelaide

5 OCT 2018: A54-029 (HB-HWC) msn 262 pre-fight checks at Stans, not slated for delivery until early 2019
This shows how the Swiss ferry registrations are now being re-used, as from A54-027/HB-HWA.

Thanks to "correspondents" at Stans and Adelaide for keeping track of all these RAAF aircraft as they go through the production/testing/delivery phases, as this provides us with unprecedented pre-RAAF details of each of our aircraft.

4 October 2018, Indonesian Aid: A RAAF 37SQN C-130J Hercules aircraft depart Australia on 4 October carrying humanitarian supplies for people affected by the earthquake and tsunami that has devastated Central Sulawesi, Indonesia. The aircraft carried tarpaulins, tools to build shelter, as well as hygiene and birthing kits.

With over 70,000 people displaced by the tsunami, these supplies will provide critical relief. Australia delivered more supplies over the following days, working closely with the Indonesian Government to help people affected by this tragedy.
By early October, Australia has committed over $5.5 million to support the Indonesian Government and humanitarian partners in the tsunami and earthquake relief response.

18 October 2018, Kiowa Retirement: Army Kiowas conducted their last flight on 18 October as part of the Army Aviation Corps 50th Anniversary parade. On this day, the Australian Army Aviation Corps marked 50 years since formation, celebrating with a ceremonial parade, flypast and a variety of displays at the Army Aviation Training Centre, in Oakey, Queensland.

In addition to the flypast in Oakey, simultaneous flypasts were held in Sydney, Townsville and Darwin. Head of the Australian Army Aviation Corps, BRIG Scott Benbow, said: "From a small Corps formed in 1968 flying light fixed-wing aircraft, the Australian Army Aviation Corps has grown to be an advanced, state-of-the-art force. Today, the Australian Army Aviation Corps flies a variety of capabilities, including the Tiger armed reconnaissance, Chinook medium lift and Taipan multi role helicopters."

The commemorations saw the final flight and retirement of the Army's Bell 206B-1 Kiowa fleet after almost 47 years of service and almost 500,000 flying hours, today we farewell the Australian Army Bell 206B-1 Kiowa fleet. The Kiowa has been a part of many Army Aviation units throughout its life commencing its service with 171 Air Cavalry Flight.

The Kiowa has been deployed on operational service to Timor-Leste and countless domestic operations and disaster relief responses.

23 October 2018: Former RAAF Lockheed Martin AP-3C Orion **A9-656** (Bu 162656, msn 5778) was registered as N656T with the US FAA on 5 October 2018, with the registration N656T, in the name of MHD Rockland Services Inc of Florida. After sitting at Avalon for several weeks, she departed on 23 October, transiting through Pago Pago, American Samoa. The next AP-3C **A9-664**, reportedly N664SD, left Avalon on 16 November, to arrive in Florida on 19 November.

A9-656 waiting at Avalon for ferry to the USA

25 October 2018*: "Down Under Aviation News"* reports that the RAN's newest unit has commissioned at HMAS *Albatross*. The new unit, 822X Squadron, was formed by the Naval Unmanned Aircraft Systems Unit (NUASU) formally transitioning into a new active squadron. *"Down Under Aviation News"* team member, Darren Crick, is working towards a full report and photos, to be published on that website soon.

Commissioning of the Navy's new 822X Squadron on 25 October

RAAF AIRCRAFT MARKINGS SINCE 1950
SQUADRON MARKINGS – PART 10
John Bennett 2018

AERMACCHI MB-326H / CAC CA-30

The last instalments have addressed camouflaged aircraft of the Second World War, which shed this cover in peacetime to bare aluminium – silver, or natural metal finish – in the 1950s. Our last erisode then looked at the opposite – starting life in natural metal and ending their service careers in camouflage! First was the Commonwealth Aircraft Corporation (CAC) CA-25 Winjeel. The next is covered here, the Aermacchi MB-326H, which was built under licence at Fisherman's Bend[1] as the CAC CA-30, referred by all throughout the RAAF as "the Macchi".

Early Macchis of CFS East Sale in 1968

A RAAF evaluation team had departed Australia in FEB 1965 to look for an 'all-through' pilot jet trainer to replace both the RAAF's existing training aircraft, the Winjeel [2] and the Vampire [3]. Six aircraft were evaluated, and on 26 AUG 1965 the selection was announced as the Macchi MB-326[4] – designed by the Aeronautica Macchi Spa (Aermacchi) company, and first flown in DEC 1957. The original RAAF program consisted of 75 aircraft and 120 Viper engines, with Hawker de Havilland (HDH) selected as the main sub-contractor receiving about 30% of the work. [5]

Macchi A7-004 at CFS East Sale, late 1967/early 1968, with the original 30-gallon tip tanks

OUR FIRST MACCHI – A7-001

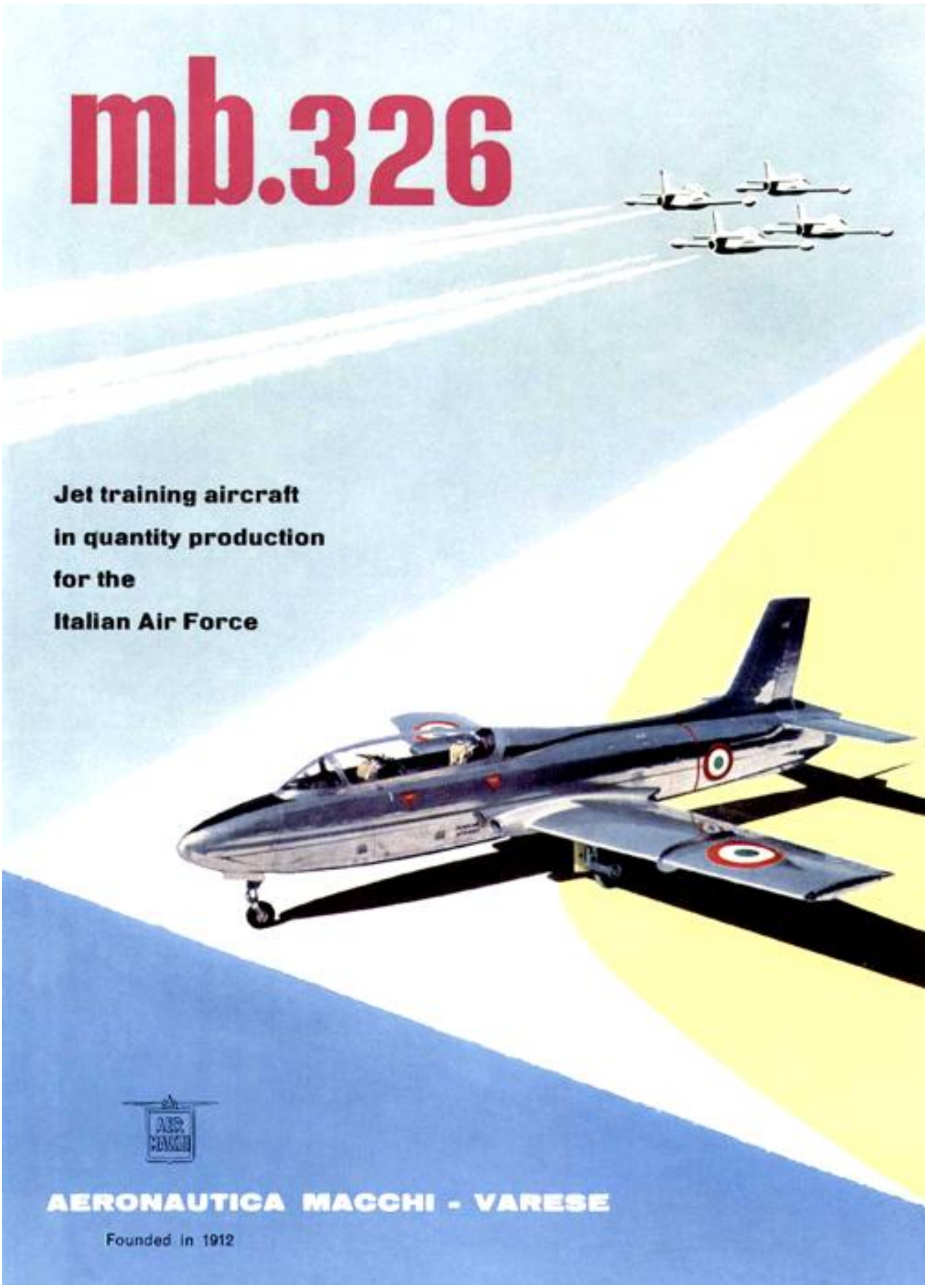
1967 A7-001 the first Australian Macchi MB-326H of CFS, with the small 30-gal tip tanks

A7-001 with the red Aermacchi fuselage break point for engine removal, but as this was not an RAAF requirement it was soon discarded – this image shows well the early 30-gallon tip tanks. Served with CFS 'Telstars' in 1968.

1968 A7-001 and A7-002 with the CFS 'Telstars' – the 'large' nose number had been marked

1986 A7-001 with 2FTS in standard training 'Fanta can' orange – 'smaller' nose numbers, larger 90-gal tip tanks

1990 A7-001 in the post-1990 76SQN all-over *Extra Dark Sea Grey* (EDSG)



1960 *Interavia* advertisement for the Aermacchi MB-326

In MAY 1967, the first three RAAF Macchis were test flown in Italy by an ARDU pilot, and on 26 JUN 1967 the first four aircraft (A7-001 to A7-004) sailed from Genoa aboard *SS Hartford* for Melbourne, arriving on 7 AUG 1967.[6] For Australian production, the first 12 aircraft were to be fully imported and assembled at Avalon, the next 18 would have a reduced imported content, so that from the 31st aircraft (A7-031) there would be some 85% local content.[7]

CAC CA-30 Macchi production at Fisherman's Bend 1969

The first RAAF Macchi, A7-001, was formally handed over at Avalon in early OCT 1967, and on 9 JUL 1969 the RAN announced the order for ten Macchis to replace the Vampire.[8] Subsequent attrition orders for the RAAF, plus these ten for the Navy, brought the total CAC assembly/production to 97 aircraft.

Australian Production

The original plan for the assembly and production for the first 30 aircraft was as follows:

- aircraft 1-6: fly away complete, fully flight tested;
- aircraft 7-12: assemblies generally completed, but not flight tested;
- aircraft 13-21: major assemblies received with piping, looms etc installed, assembly and function tests required;
- aircraft 22-27: major sub-assembly structures received to major stage of assembly, no piping or looms installed, and first fuselage from this group installed into rig to check CAC tooling; and
- aircraft 28-30: full set of parts received, one set held over for a time as a master set to check CAC/HDH manufacture.[9]

This plan resulted in the first 21 aircraft having Macchi constructor's numbers, with subsequent assembled and manufactured aircraft having CAC CA-30 c/ns. This slight variance with aircraft A7-014 in 1968 is illustrated below.[10]

RAAF Serial	c/n	Delivery to RAAF
A7-001 to A7-013	6351, 6370, 6371, 6374, 6377, 6380, 6373, 6376, 6379, 6382, 6383, 6385, 6381	OCT 1967 – MAY 1968
A7-014	CA30-14	MAY 1968
A7-015 to A7-021	6387, 6388, 6389, 6391, 6392, 6394, 6395	JUN-JUL 1968
A7-022 to A3-097	CA30-22 to CA30-97	AUG 1968 – SEP 1972

Australian CA-30 Macchi Production (RAAF and Navy aircraft)

It is probable that A7-014 did have a Macchi c/n, but was diverted from the original aircraft 13-21 plan, to expedite CAC's production process.

PERSONAL & CONFIDENTIAL.

MINISTER FOR SUPPLY
M.L.C. Building,
432 Hunter Street,
NEWCASTLE N.S.W.

December 24, 1964.

Dear Harold,

The R.A.A.F. want 75 trainer aircraft. We would like to build them in Australia, and I think there are some issues of prime importance wrapped in the question.

We had a sub-committee meeting in Canberra last week with Shane Paltridge, Peter Howson, and me; as a result of which Shane will put a proposition to you seeking another £236,000 to continue the design effort so that when the R.A.A.F. sits down to look at all the prospects in mid 1965, there will be at least an Australian proposition to look at.

Shane's submission will be a composite of the views of the Departments of Supply and Air, but I thought I should get in early and let you have a copy of my comments which is hereto attached.

There might well be the material for a Cabinet Submission in this. If so, of course, it might need to be done fairly soon because present funding will carry us only until the commencement of business in 1965.

Kind regards.

Sincerely yours.

(ALLEN FAIRHALL)

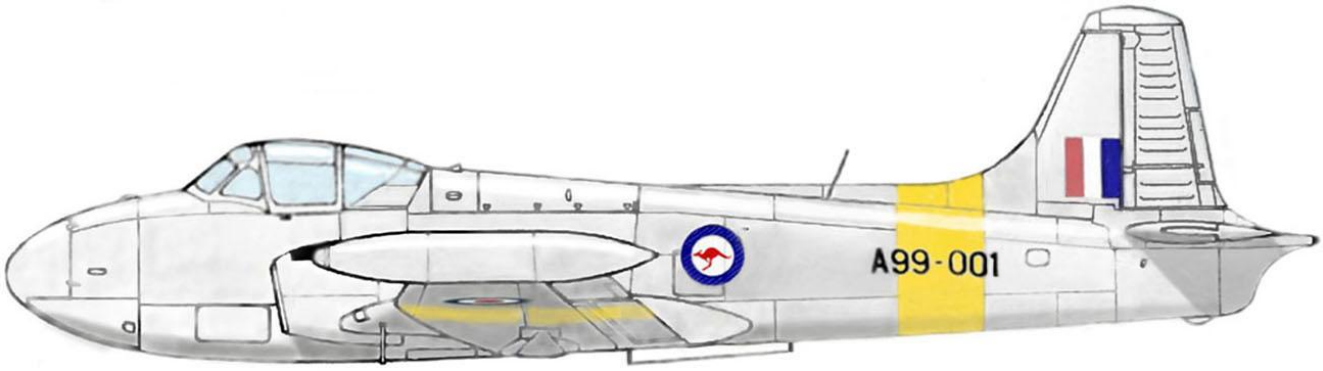
The Rt. Hon. H. Holt, M.P.,
Treasurer,
Parliament House,
CANBERRA A.C.T.

Letter of 24 DEC 1964 from Minister for Supply (Fairhall) to Treasurer (Holt), discussing deliberations with Minister for Defence (Paltridge) and Minister for Air (Howson) for the order for 75 new trainer aircraft, before the down-selection.[11] RAAF evaluation visits from FEB 1965 looked at six types; the Macchi was announced on 26 AUG 1965.

OUR FIRST 'ALL-TROUGH' JET TRAINER – A99-001

1959: Jet Provost T.2 A99-001 (colourised) was trialled at 1BFTS Point Cook

The Hunting Percival 'JP' T.2 G-AOHD was leased by the RAAF over APR-DEC 1959 for evaluation as an 'all-through' jet trainer at Point Cook, and flown by two students on 35 Pilots' Course. Full details at *adf-serials A99*.[12]



Fuselage Kangaroo Roundel 18" (45.72cm) **Fin Flash 18" H x 18" W (6" per colour)**
Type-'D' Wing Roundels 24" (60.96cm) **Training Bands 24" width** **Serial Number Figures 8" x 5"**

1962: A99-001 back as G-AOHD at the Bankstown Air Pageant, before moving to Sydney Tech College at Ultimo

‘All-Through’ Jet Training

In the late 1950s, the RAAF planned to evaluate light jet primary trainers for the introduction of ‘all-through’ jet training in 1964.[13] With this aspiration in mind, a company demonstrator Hunting Jet Provost T.2 trainer was leased from UK for evaluation at 1BFTS Point Cook over 1959. The aircraft, serialled A99-001, was received by the RAAF in Canberra from de Havilland Bankstown in APR 1959. It then went to 1BFTS Point Cook.

At Point Cook, the RAAF evaluation involved selecting two students of No.35 Pilots’ Course to be trained on the “JP”, while the remainder of the course learned to fly on the Winjeel. At the end of this six-month phase, the aircraft was returned to de Havilland in NOV 1959. The aircraft was no longer required by the parent company, and was presented to the Sydney Technical College as an instructional airframe. [14]

Further Jet Provosts were not ordered by the RAAF; instead the service continued to operate the Winjeel and Vampire, until the Vampire was replaced by the Macchi MB-326 from 1968. Had the Jet Provost been ordered by the RAAF as an all-through trainer, the plan would have been for de Havilland at Bankstown to build the type in the early 1960s when the production of the RAAF’s Vampire T.35's had been completed.

1959: Jet Provost T.2 A99-001, the RAAF’s first jet trainer with 1BFTS

The introduction of the Macchi meant that students would receive about 200 hours on the new jet, and No.70 Pilots Course was the first to undergo all-through training when it arrived at 1AFTS (soon to become 2FTS) Pearce in 1968 to start the new 59-week syllabus. However, problems soon arose. Flying the Macchi proved an expensive method of ‘flight grading’ – the steps to discover that some students, despite their pre-recruitment screening, lacked the necessary aptitude for military pilots.[15]

1968: Macchi and Vampire line-up at 1AFTS Pearce

Another problem from all-through Macchi training was that the relatively easier handling qualities and advantages of modern instrumentation meant that graduating students would face problems when converting to more demanding operational types, such as the Canberra and the Sabre. Examples of these transitional issues were:

- The Canberra was a difficult twin-engined aircraft to master, which still had Vampire-style instrumentation. In addition to the demanding workload of flying the Canberra, converting pilots from the Macchi's easy and ideal cockpit found it very difficult stepping back to the antique, and un-ergonomic instruments of the Canberra.
- Pilots graduating from Macchi to the Sabre (scheduled to soon leave service) flew the 'Sword' at Williamtown as a lead-in fighter with 2(F)OCU, and then 5OTU, having first converting to the Vampire – there were no spare Macchis for Williamtown at this stage. A two-seat trainer before the Sabre was still required, and Vampires were retained at Williamtown until 1970-71 when Macchis became available. However, despite this hiccup, when the Sabre was withdrawn in 1971, pilots did find a smooth transition from the Macchi to the Mirage.
- The Navy went through similar problems, with Macchi graduates having to 'down-convert' to the Vampire until Macchis became available (N14-073 being the first in the Navy's initial batch of six delivered over the second half of 1970), which allowed retirement of the varied 'mixed-bag' of Navy Vampires.

1968: A7-003 with CFS East Sale

The first Macchi all-through students, No.70 Course, graduated in SEP 1969 and only one more course, 71 Course, would follow this all-through Macchi syllabus.[16] Through 1969 the RAAF was already planning the reversion to a Winjeel-Macchi syllabus, with about 60 hours dedicated to the Winjeel at 1FTS Point Cook, and some 150 Macchi hours at 2FTS Pearce. This forced change of plans would impact the bases – the Winjeel would now have to remain in service (with all the logistical ramifications that entailed), 1FTS would have to remain as a flying unit (staffed with Winjeel instructor pilots and maintenance personnel), and CFS would have to restart Winjeel instructor training courses. These were not insignificant changes to policy – and further, the Winjeel would soon need replacement, so a search was hurriedly started for a new *ab initio* trainer. The wheel had turned.

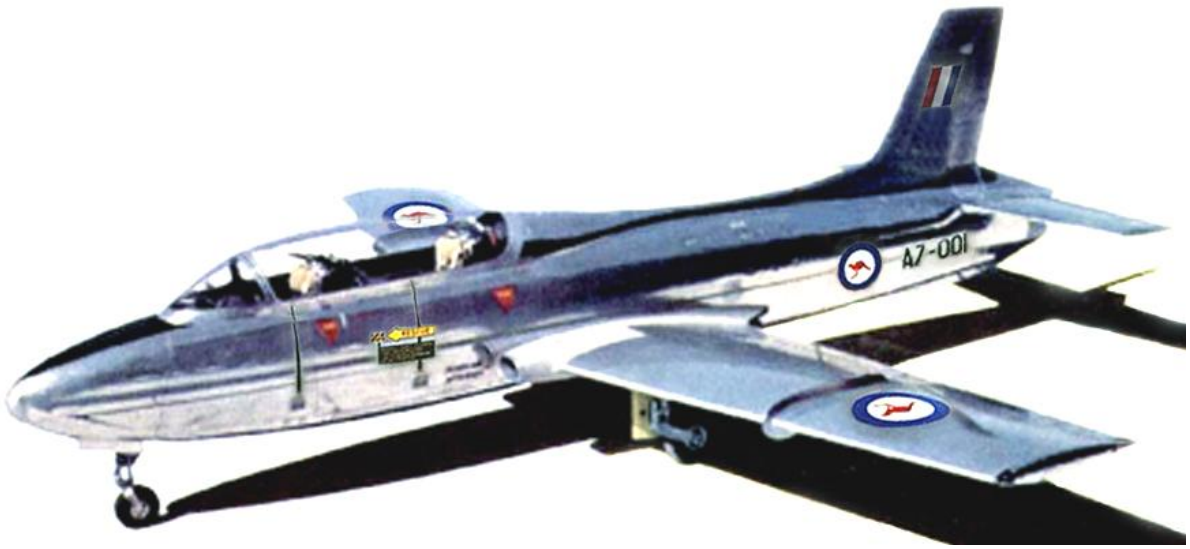
1969: A7-001 in FEB 1969, with the initial 'large' last-two nose number marked

Front seat in the Macchi MB-326H *[Darren Mottram/ASO image]*

Changes in RAAF Flying Training

In the previous instalment covering the Winjeel, a summary was provided into RAAF flying training in the postwar years. Concentrating on the later years, that summary is adapted now more particularly to jet training:

- No.8 Pilots' Course in 1953 (Tiger Moths and Wirraways) was the first 1BFTS course at Uranquinty.[17]
- By the end of 1955, 1BFTS Tiger Moths at Uranquinty were being withdrawn, replaced by the RAAF's new basic trainer the Winjeel, from the beginning of 1956
- No.34 Course was the last to fly from Uranquinty in 1958 (graduating on jets from 1AFTS Pearce in SEP 1959). 1BFTS relocated with its Winjeels to Point Cook in DEC 1958.
- Two students of No.35 Pilots' Course were trained in 1959 on the evaluation Jet Provost at 1BFTS.
- The separate training of the RAAF College Flying Training Squadron at Point Cook was discontinued at the end of 1958. No 8 College Course was the first to graduate on Vampires at 1AFTS Pearce in 1959,[18] however it was not until 1961 that 12 College Course combined with the direct entry course, 46 Pilots' Course.
- In NOV 1964, the Defence Expansion had announced that 75 jet trainers would be ordered to replace the Winjeel and the Vampire, and these would enter service in 1968. In AUG 1965, the Macchi MB.326H was selected (eventually 97 aircraft would be delivered by 1972).[19]
- No.68 Pilots' Course from 1967 was the first to fly the Winjeel-Macchi combination in 1968, with 69 Course maintaining the Winjeel-Vampire training, while 70 Course was the first of the "all-through" Macchi courses.

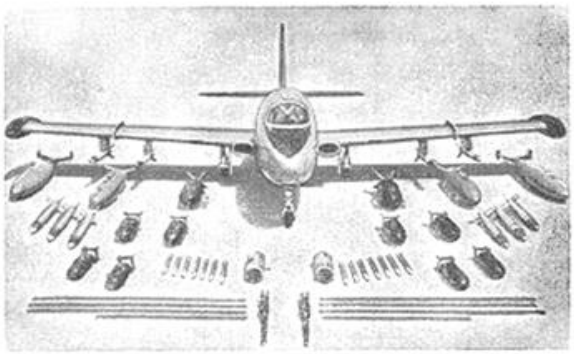


- At the beginning of 1969, the unit name 1BFTS was changed to 1FTS; 1AFTS became 2FTS.
- During 1969, two 'Macchi-only' courses were conducted, and it was soon recognised that "all-through" training was inefficient and inadequate. Obviously an *ab initio* trainer was still required, if only for flight grading and with a reduced Point Cook syllabus. Winjeel/Macchi training courses would therefore run from 1970 to 1975, at 1FTS and 2FTS.
- In JUL 1972, the Minister for Defence announced that the RAAF would receive a total of 37 CT-4s to replace the Winjeel as the RAAF's basic trainer. In 1980, a further 14 were ordered. 1FTS continued to fly the Winjeel until late 1975, with the first CT4 aircraft being received at Point Cook from MAR 1975.[20]
- The Pilatus PC-9 was selected as the new advanced trainer in 1985; the first delivered to 2FTS in JUN 1989:[21]
    - This was the first of 46 PC-9s to arrive at 2FTS, with No.151 Course beginning flying the turboprop trainer later in 1989.
    - The last Macchi 2FTS training was No.154 Pilots' Course, which graduated in JUN 1991. The Macchi continued flying with 2FTS alongside the PC-9 until the last Macchi departed in SEP 1991.
    - With the closure of 1 FTS at Point Cook and the subsequent disposal of the CT4 piston trainer from 1993 (replaced by the BAE training system of flight grading at Tamworth),[22] all-through RAAF PC-9 flying training began with No.163 Course, in JUN 1992.[23]

On 1 JAN 1969, 2FTS had begun operations with Vampire and Macchi trainers – the Vampire to complete the few remaining Winjeel/Vampire courses, but the Macchi for "all-through jet training" concept lasted only for two courses. Vampire aircraft were phased out of service in JUN 1969. In the first year of all-Macchi operations, 97 students graduated from four courses, as scheduled, without loss of planned flying time.[24]

MACCHI MB-326H — new all-through Jet Trainer for the Royal Australian Air Force being manufactured under licence in Australia by Commonwealth Aircraft Corporation Pty. Ltd., is scheduled to go into service at the end of 1967.

efficiency



Armed Version

Civil Trainer

Aeronautica Macchi S.p.A. Varese — Italy.

1966 Aermacchi advertisement about their success with RAAF and CAC

Markings

High Visibility *Light Orange* – but not Dayglo

Overall lacquered *Aluminium* and natural metal was the finish for the first years of service until the wheel turned and it was obvious a high visibility scheme was required for the training environment. It was almost history repeating itself – when dayglo orange was added to both Vampires and Winjeels from 1961. The introduction of revolutionary fluorescent dayglo (US Federal Standard FS595a vocabulary FS28913, semi-gloss *'Blaze Orange'* or *'Fluorescent Red Orange'*) schemes to RAAF aircraft was a major process, more than just applying another coat of paint. Fluorescent paint had been a new product, and its application was lengthy, strictly following a Military Standard. This involved stripping the surface back to bare metal, applying two smooth coats of white primer, and then after the prescribed intervals, three applications of the fluorescent orange dayglo, then three sealer coats.[25] But the bright reflectivity (luminescence) of dayglo was offset by the inconvenience of it fading quickly, as the fluorescent dayglo soon showed its very unstable pigmentation, fading within about two years. Its maintenance involved stripping off the old dayglo and surrounding paintwork to provide a clean surface and prevent any paint build up – all this before the time-consuming re-application could begin.

Therefore an alternative to dayglo was adopted in 1970. This became known as the "Fanta Can" scheme, comprising gloss *Light Orange* BS381C-557 and gloss *White*. A comparison of the bright semi-gloss *dayglo* is provided below. *Dayglo* soon faded to a shade similar to *Light Orange* – but orange was gloss and far easier to maintain its bright sheen.

Lacquered *Aluminium*	***Light Orange BS381C-557***	***Dayglo FS28913***

A7-013 in the 'Fanta Can' scheme, adopted from 1970, fitted with the standard 90-gallon tip tanks

Two *Aluminium* Williamtown Macchis were returned to the factory in late 1970 after suffering extensive hail damage. *Adf-serials* contributor photographer Rod Farquhar records that these aircraft, A7-061 and A7-062, were both repainted in "Fanta Can" scheme when the damage was repaired, and A7-061 appeared at RAAF 50th Anniversary air show at Richmond in APR 1971.[26]

In 1975, the CT4 was received in the DSTO-designed/ARDU 'high visibility' colour scheme of *'Deep Bronze Green'* BS381C-224 and *'Golden Yellow'* BS381C-356. This was soon to be replaced on the CT4 in 1982 by the Macchi's orange and white (also later adopted by the PC-9). In addition, one Winjeel (A85-443) was trialled in this scheme, and *orange-white* scheme was also applied to the ARDU flight test Mirages A3-2 and A3-112[27] (and also A3-115 post-retirement).[28]

The two 'high visibility' CT4 schemes in 1982

Macchis A7-081 and A7-032 with the sole 'Fanta Can' Winjeel A85-443

Nose Numbers

Nose 'last two' numbers were added from 1968, with initially a large 'stencil' style, 26" height. This style lasted up to at least A7-028, and was then reduced to the smaller 20" in 1969. Illustrated below are these two styles used from 1968 – until aircraft were camouflaged, or until 2FTS aircraft were retired.

The initial 1968 26" stencil numbers

Replaced in 1969 by 20" numbers

CAC Factory Markings

The CAC "speedbird" logo, added in the factory to either side of the fin above the fin flash, apparently from aircraft A7-020 until final production, A7-097. On aircraft repaint this logo was over-sprayed, as it was not an official RAAF requirement, and it impacted on positioning squadron/unit markings.

A7-063 when delivered in OCT 1969 shows the standard factory delivery markings:

- from 1969, aircraft were delivered from CAC with the 'smaller' 20-inch style nose numbers;
- the CAC logo was marked on the fin on both sides, but did not survive the next repaint in RAAF service;
- the 2(F)OCU tail marking of the yellow/black tiger band has, at this stage, not yet been added;
- *Aluminium finish* (apparently A7-067 in 1970 was the first delivered from CAC as an *orange/white* 'Fanta Can');
- national markings – roundels in six positions, and standard slanted fin flash.

A line-up of eleven Macchis at East Sale, probably at the end of 1969 for 2(F)OCU instructor conversion

Aircraft are A7-057, -066, -032, -026, -028, -060, -059, -010, -012, -027, and -014. Some aircraft have the earlier style of "large" nose numbers, while the higher numbered have "smaller" nose numbers and the CAC bird logo.

Macchi Rescue Markings

The Macchi introduced comprehensive safety and rescue markings applied to the port fuselage below the cockpit. Training aircraft previously did not have such intricate detail – the Vampire for instance only had the red warning triangles, after the ejection seats were fitted over 1955-59.

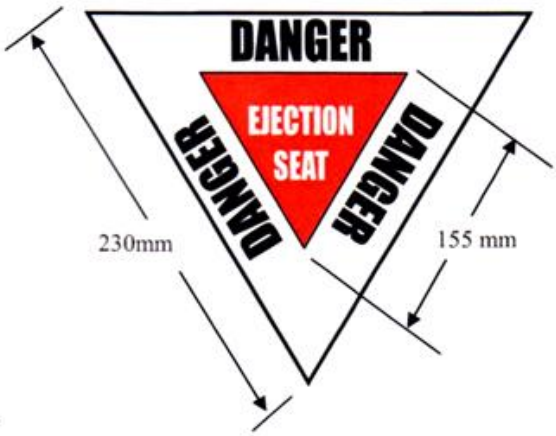
Macchi port fuselage warning and safety advice below the cockpit

The RAAF AAP 7021.004-1 provides details on the ejection seat warnings, which are red equilateral triangles (of 6-inch or 155mm sides) for each seat, and applied to both sides of the fuselage.[29]

EJECTION SEAT WARNING

A red filled equilateral triangle, approximately 155 mm (6 in), resting on the apex. A 230 mm red outer border shall enclose the red triangle. The words 'DANGER' shall be coloured red with the base of the lettering adjacent to the red triangle as shown in the adjoining diagram. The words 'EJECTION SEAT' to be marked in white lettering within the red triangle.

Variations for tactical colour schemes: replace the red with a contrasting colour to suit the finishing scheme. The base finish of the background shall be used in leiu of the white. (Refer to Chapter 1 paragraph 63)



MACCHI LARGE NOSE NUMBERS – 1968-69

For ease in identifying individual aircraft, as had been done with the Vampire, the “last two” of the aircraft serial number were marked on both sides of the nose – initially (1968-69) in 26-inch figures, up to at least A7-028.

Early nose numbers 1968-69: 26” x 12” 3” stroke

MACCHI SMALLER NOSE NUMBERS – from 1969

The size of the "last two" nose numbers was reduced to 20-inches from 1969, this becoming the new standard for all Pearce, East Sale, and Williamtown-based aircraft. From 1970, these numbers were applied by the CAC factory.

1234567890

Standard nose numbers from 1969: 20" x 12" 2½" stroke

A7-065, here in 5OTU markings at Williamtown in 1971, was about the last Macchi delivered by CAC in the *Aluminium* scheme. Thereafter RAAF Macchis were delivered in *Light Orange/White*, shown by A7-036 below.

Camouflage

2(F)OCU received its first Macchis in 1969,[30] and on 1 APR 1970 5OTU was formed by the OCU Sabres, Vampires and Macchis being transferred from 2OCU.[31] When 5OTU was disbanded at the end of JUL 1971 with the retirement of the Sabres and Vampires, the Macchis were returned to 2OCU. The Williamtown Macchis were then camouflaged from the late 1970s. This organisation of 2OCU continued until the next decade, when the requirement was to concentrate on F/A-18 Hornet conversions, and so in 1985 2OCU passed the Macchi conversions and fighter lead-in training to 77SQN. Soon in 1987, 77SQN converted to the Hornet, so 76SQN was re-established to take on the Macchi roles, which also now included fleet support to the Navy (as Navy's fixed wing capability had been been withdrawn).

Other changes were occurring at Pearce, where 2FTS Macchis were being replaced by the PC-9 from 1989. With graduating pilots having not flown jets, a bridging course was established at Pearce to provide young pilots some jet experience before proceeding to their respective conversions. To fulfil this new requirement, 25SQN was re-roled in late 1989 from a CAF base administrative Reservist unit, to once again become a flying squadron. (To emphasise this unique status, 25SQN Macchis were marked with '**RAAF RESERVE**' along the fuselage.) 25SQN also took on a new role of fleet support for the increasing naval presence in the West. Much later, when Macchis, PC9s and RSAF Siai Marchettis were flying around Pearce, it was apparent the camouflaged Macchis were difficult to see against the ground. Accordingly, bold stripes of *Yellow* were applied on the wings and tailplane to aid visibility.

Prospective fast-jet aircrew underwent jet conversion with 25SQN, and then the Introductory Fighter Course at Williamtown with 76SQN. Both units then maintained these roles with the Macchi, until replaced by the Hawk Mk.127 from 2001.

Overall, camouflaged Macchis flew with 2(F)OCU, and 25, 76, 77 and 79SQNs. The camouflage adopted by the Macchi was the same as being used by the 'Tactical Fighter Force' at the time, on the Mirage, and the Winjeel FACs. In 1971, as all Mirages were being upgraded to a common multi-role standard and could be used by any of the four fighter squadrons and the OCU, a three-tone camouflage scheme was introduced which became known as the 'Standard' scheme.[32] This camouflage was *Olive Drab* B381C-298 with *Extra Dark Sea Grey* (EDSG) B381C-640 upper surfaces, and *Light Gull Gray* FS26440 lower surfaces.

A 76SQN aircraft (A7-076) crashed in 1990 due to wing fatigue problems. An investigation into the Macchi fleet's fatigue life resulted, and available airframes were reduced and reallocated over the following years.[33]

Olive Drab BS381C-298	***Extra Dark Sea Grey BS381C-640***	***Light Gull Gray FS26440***

Overall EDSG

From 1990, the 3-colour camouflage was gradually replaced by an all-over *EDSG*. Probably the first Macchi appeared in this 1990 EDSG was A7-071.[34] However, fatigue issues affected the life of various airframes. Aircraft that did not undergo the Life-of-Type Extension (LOTEX) and did not have wings replaced were retired immediately from the end of 1990; therefore many aircraft were retired to RSTT Wagga with the 3-colour scheme.

76SQN A7-027 in all-over *Extra Dark Sea Grey* (EDSG) adopted from 1990

Stores

The early Macchis were fitted with 30-gallon tip tanks, which were soon replaced with the larger 90-gallon tanks. It was extremely unusual for a Macchi to fly without tanks. Originally there was no weapons carriage or sighting capability, but this was required by the later aircraft delivered to the Williamtown training units, initially 2(F)OCU and then 5OTU. Plans to add the underwing General Electric 7.62mm SUU-11B/A M134 Minigun pod were announced in MAY 1966,[35] to be aimed by a Ferranti ISIS gunsight.

The gunsight was also used for aiming 5kg practice bombs carried on a Light Stores Bomb Carrier (LSBC) mounted on an underwing pylon. This light blue bomb (signifying a practice weapon) was of a similar appearance to the Mirage's larger tear-drop shaped 25-lb BDU-33, and utilised the same F2 smoke/flash spotting charge. These practice weapons simulated a 500-lb MK82 low drag bomb configuration.

A7-092 of 76SQN in 1991 with SUU-11B/A Minigun pods

Instructional Airframes

We have been fortunate in that often when the RAAF deemed an airframe as no longer airworthy or operational, it has often been retired to instructional use – this was often to the RAAF School of Technical Training (RSTT) at Wagga,

As Macchis were withdrawn from flying, many passed to RSTT as Instructional Airframes, but by the 1990s these training aids were not being allocated specific I/A numbers, retaining their service A7- identity. According to our *adf-serials* website,[36] approximately 40 Macchis passed through RSTT as I/As, with half still remaining there for technical training. About 16 of the Macchi fleet were stored at Northam (60km east of RAAF Pearce) and offered for disposal in 2004, some subsequently going to museum display.

RAAF MACCHI INSTRUCTIONAL AIRFRAMES	
RAAF Serial	**Details**
A7-004	76SQN, to I/A RSTT 11/2000, to be gate guard at RAAF Wagga
A7-005	76SQN 5/1999, to I/A RSTT
A7-006	76SQN 5/1999, to I/A RSTT, offered for disposal Northam WA 2004
A7-011	76SQN 3/2001, to I/A RSTT
A7-012	76SQN 5/1999, to I/A RSTT
A7-013	76SQN 7/2000, to I/A RSTT
A7-017	2FTS, to I/A RSTT
A7-019	76SQN 5/1999, to I/A RSTT
A7-023	76SQN, to I/A RSTT, 12/2004 to SA Air Museum, to Derelict A/c Museum, Launching Place VIC
A7-026	Crashed Saltash 8/1985, to I/A RSTT, disposal 2004, to display SA Air Museum
A7-029	79SQN 5/1999, to I/A RSTT
A7-030	76SQN, to I/A RSTT, disposal 2004, on pole display at HARS Albion Park NSW
A7-031	76SQN, to I/A RSTT, disposal 2004, to Derelict A/c Museum, Launching Place VIC
A7-032	CFS to 1988, to I/A RSTT
A7-033	Damaged landing 2FTS 2/1988, to I/A RSTT
A7-034	2FTS, to I/A RSTT
A7-040	76SQN 9/1999, to I/A RSTT
A7-043	76SQN 6/2001, to I/A RSTT
A7-044	76SQN 6/2001, believed to I/A RAAF Orchard Hills, Kingswood NSW
A7-047	76SQN 5/1999, to I/A RSTT, 3/2014 to RAAF Amberley Aviation Heritage Centre for display
A7-048	79SQN 5/1999, to I/A RSTT, fwd fuselage to Amberley Aviation Heritage Centre for display
A7-050	79SQN, to I/A RSTT
A7-052	ARDU, to I/A RSTT, to Fighterworld, 10/2010 memorial as A7-076 at RAAF Williamtown NSW
A7-053	79SQN 5/1999, to I/A RSTT

A7-053 (right) with A7-083 on the highly-polished floor of RSTT Hangar 84 at RAAF Wagga, AUG 2015

RAAF MACCHI INSTRUCTIONAL AIRFRAMES	
A7-056	2FTS, to I/A RSTT
A7-059	76SQN, to I/A RSTT, to SA Air Museum poss 2004, to Derelict A/c Museum, Launching Place VIC
A7-060	76SQN, to I/A ADFA Canberra, 2/1993 to RSTT storage, scrapped 2014
A7-061	76SQN, to I/A RSTT, to DSTO Salisbury SA by 1999 for electromagnetic testing
A7-070	76SQN 5/1999, to I/A RSTT until 3/2014, forward fuselage to RAAFM Point Cook

A7-070, A7-004 and A7-083 – all ex-76SQN – at RSTT in 2007

A7-072	79SQN, to I/A RSTT, 10/2018 to QAM Caloundra
A7-074	76SQN WFS 1990s, to I/A RSTT, disposal 2004, Battle Damage Repair RAAF Williamtown
A7-075	76SQN WFS 1990s, to I/A RSTT, disposal 2004, on e-Bay 2012
A7-080	79SQN 51999, to I/A RSTT
A7-081	I/A at RSTT until 3/2014, to East Sale VIC and displayed at front gate from 5/2018
A7-083	76SQN 5/1999, to I/A RSTT
A7-086	76SQN WFS 1990s, to I/A RSTT, disposal 2004, Battle Damage Repair RAAF Williamtown
A7-087	76SQN, I/A RSTT, offered for disposal 2004, displayed at Cranbourne RSL NSW as N14-087
A7-089	I/A RSTT, offered for disposal 2004
A7-090	76SQN 1999, to I/A RSTT
A7-094	25SQN, to I/A RSTT
A7-096	79SQN 3/2001, to I/A RSTT
A7-097	76SQN WFS 1990s, to I/A RSTT, 2002 to RAAFM Point Cook

MACCHI TRAINING AIDS – RSTT WAGGA

A7-005 at RSTT 2006

A7-006 at RSTT 2009

A7-011 RSTT, OCT 2009

A7-072 RSTT 2009, now at QLD Air Museum

A7-075 advertised on eBay SEP 2012

A7-090 RSTT, MAY 2006

A7-094 RSTT 2009

A7-096 MAY 2006

2FTS MACCHIS 1970-1989

Aluminium K3/162, Light Orange BS381C-557, gloss *White*, National Markings *Glossy Red K3/346* and *K3/343 Glossy Blue*

18” Fuselage Roundel

Initial Slanted Fin Flash 15” wide x 18” high

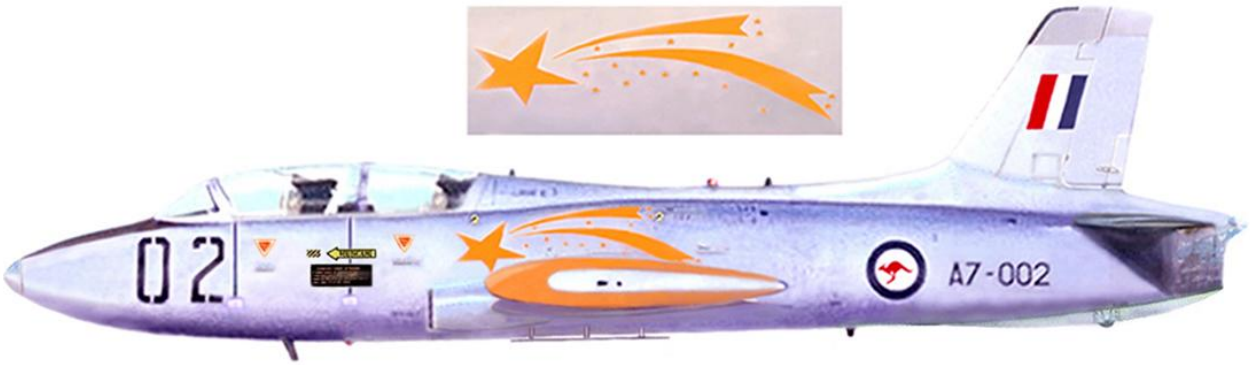
Smaller Flash, more slanted, leading edge 12” wide x 12” high

2FTS 30” Unit Marking

A7-072 2FTS – when this unit marking was added to the tail, the fin flash size was reduced to 12”x12”

RAAF MACCHI AEROBATIC TEAMS – TELSTARS 1968

In FEB 1968, the Telstars performed the first Macchi displays, but only flew the new aircraft until APR 1968 when the team disbanded.[37] Known aircraft in Telstar markings include A7-001, A7-002, A7-004 and A7-008. An orange star was carried each side of the fuselage (similar to the blue one carried previously by Telstars Vampires), with orange tip tanks – this colour was probably *Light Orange* BS381C-557. Fitted with the early 30-gallon tip tanks.



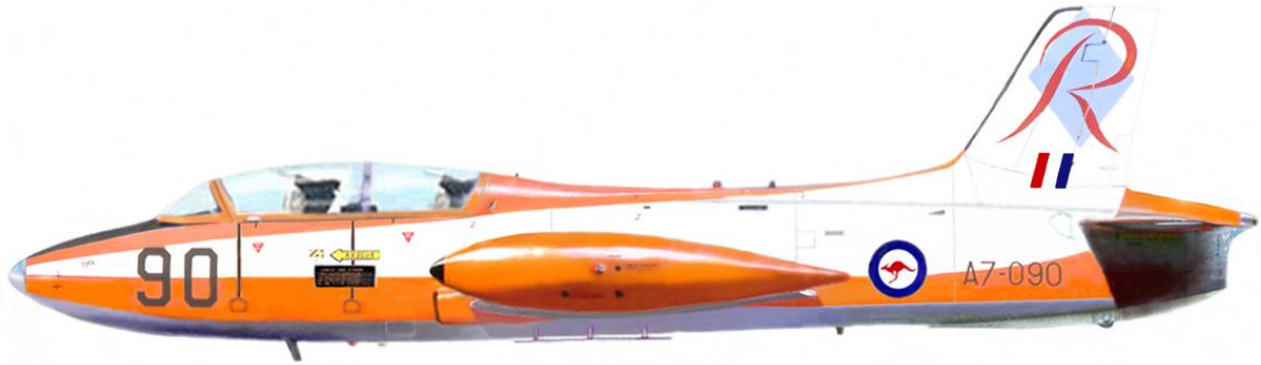
RAAF MACCHI AEROBATIC TEAMS – ROULETTES 1970-1989

In 1970, the Roulettes were formed to celebrate the RAAF's 50th anniversary to be held throughout the year of 1971. The Roulettes first air show was at Point Cook in DEC 1970, and the last with the Macchi was at Lakes Entrance in JUN 1989,[38] being replaced by the PC-9. The "R" on the tail resulted in the smaller 12"x12" fin flash.

Standard Roulette tail

Roulette Diamond 1981

From mid-1980s – 'RAAF AEROBATIC TEAM' and flag



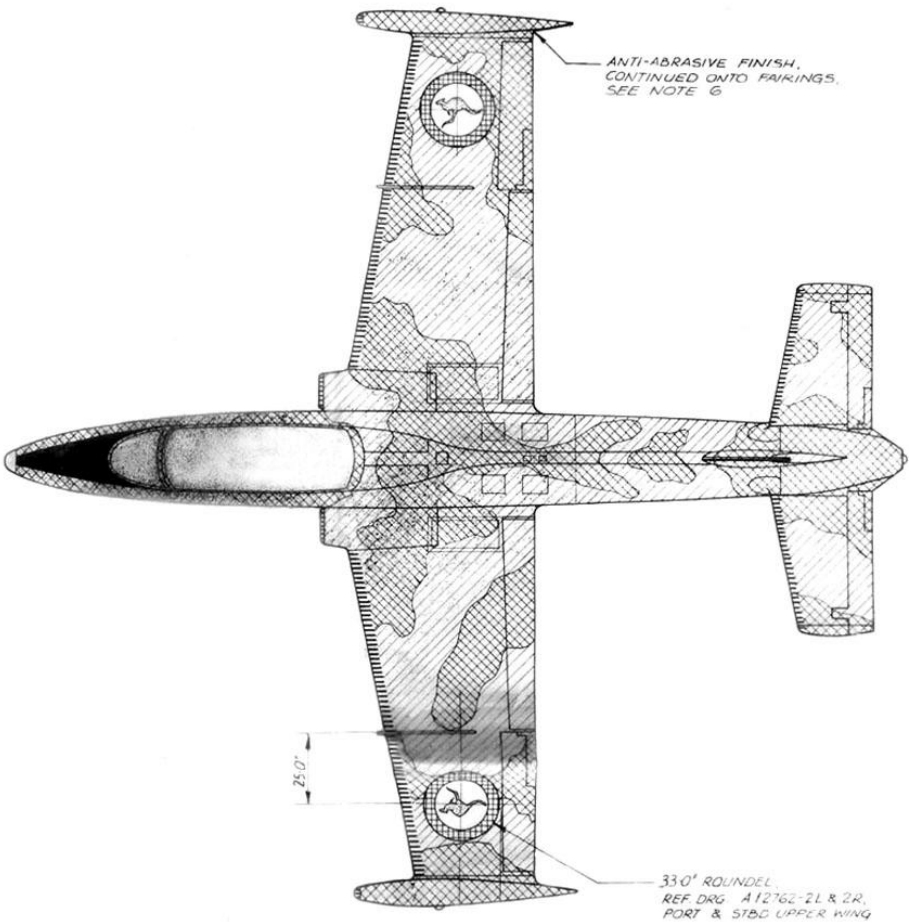
1981 RAAF "Diamond Jubilee" scheme – known aircraft A7-014, -046, -057, -089 and -090

MACCHI UPPER SURFACE CAMOUFLAGE

3-Colour Camouflage upper pattern 2(F)OCU, 25, 76, 77 and 79SQNs – late 1970s-1990

Camouflage began on the 2OCU aircraft from approximately the late 1970s then as the aircraft passed through the squadrons. From 1990, all-over EDSG gradually replaced the 3-colours as aircraft were due for repainting.

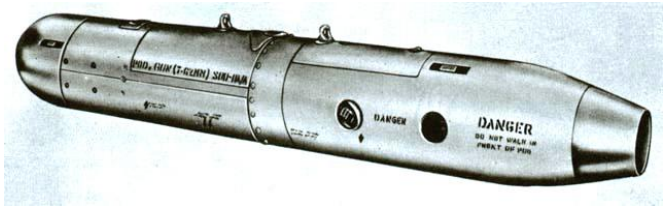
Camouflage Colours: *Olive Drab BS381C-298, Extra Dark Sea Grey BS381C-640, Light Gull Gray (underside) FS26440*

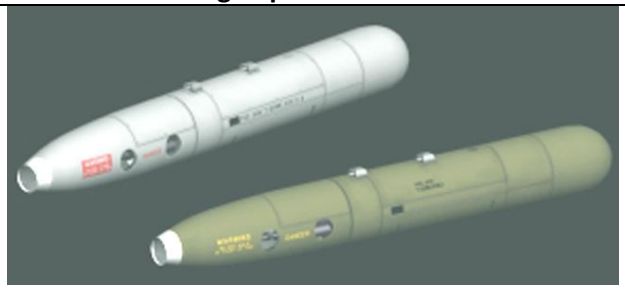


RAAF Aircraft Drawing A12762

_ARMED MACCHIS – GENERAL ELECTRIC SUU-11B/A GUN POD

76SQN A7-092 with a SUU-11B/A M134 7.62mm Minigun pod 1991





SUU-11B/A pod, housing the M134 7.62mm Minigun with a firing rate of 6000 rounds/min, with 1500 rounds

A7-057 of 76SQN with gun pods and standard 90-gallon tip tanks

Australian Air Publication
7212.001-33CL-14-1

ROYAL AUSTRALIAN AIR FORCE

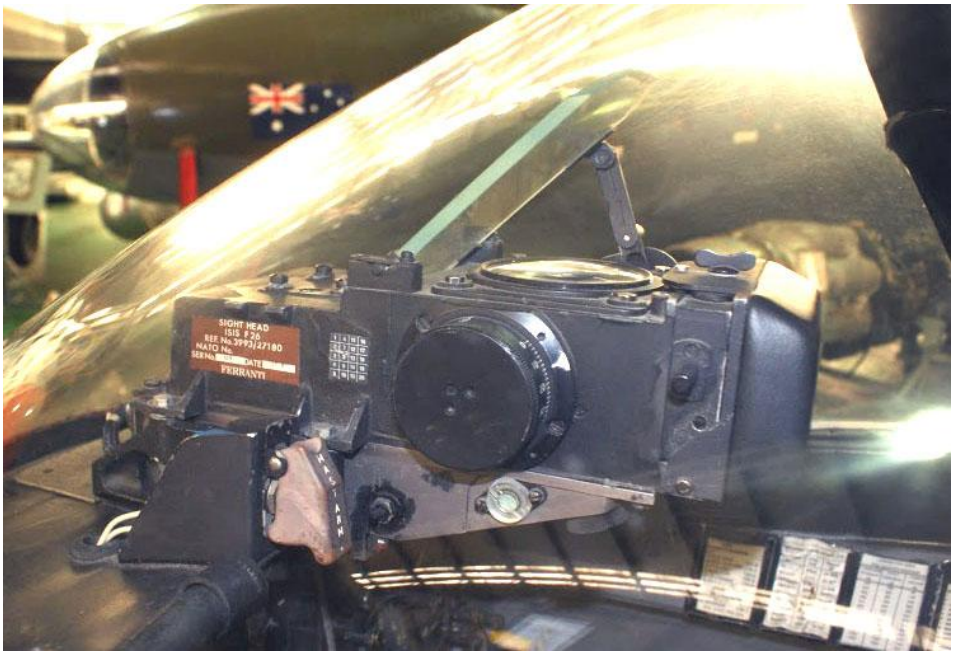
CHECK LIST
CONVENTIONAL WEAPON LOADING
MACCHI AIRCRAFT

GUN POD SUU-11B/A

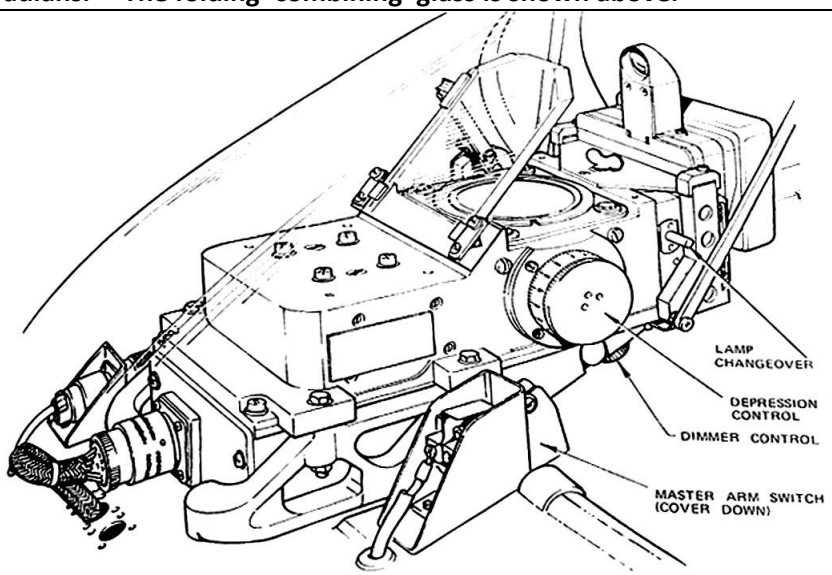
Issued for the Management and Control of the Royal Australian Air Force
By Command of the Air Board.

DEPARTMENT OF AIR
CANBERRA A.C.T

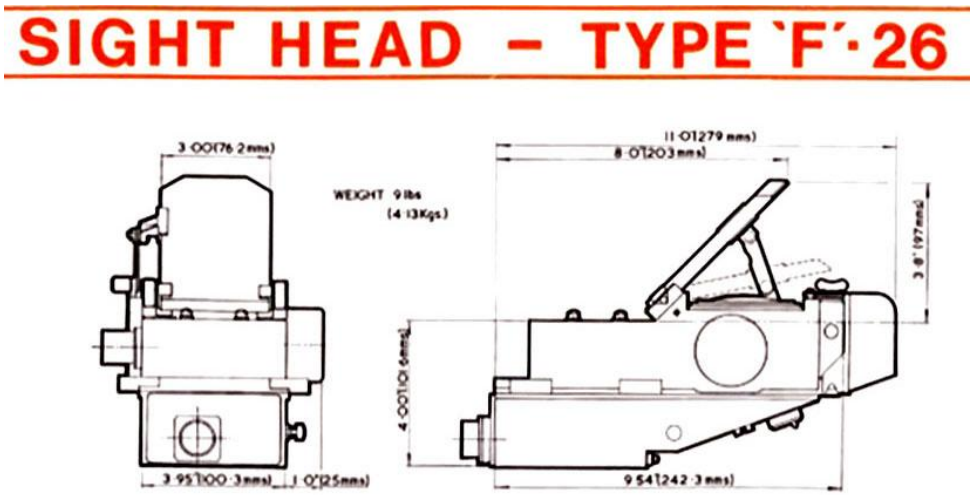
ARMED MACCHIS – FERRANTI ISIS TYPE ‘F’-126 GUNSIGHT



The Ferranti ISIS Type ‘F’-126 system, for gun and bomb delivery, incorporated the F-26 sight head which had a gyro-stabilised reticle with fixed angular dimensions.[40] The depression, the round knob on the side, could be set from 0 to 200 miliradians.[41] The folding ‘combining’ glass is shown above.



Ferranti ISIS gunsight for guns and bomb delivery



The Type’F’-26 sight head formed part of the Ferranti ISIS Type ‘F’-126 sighting system

ARMED MACCHIS – 5 KG PRACTICE BOMBS

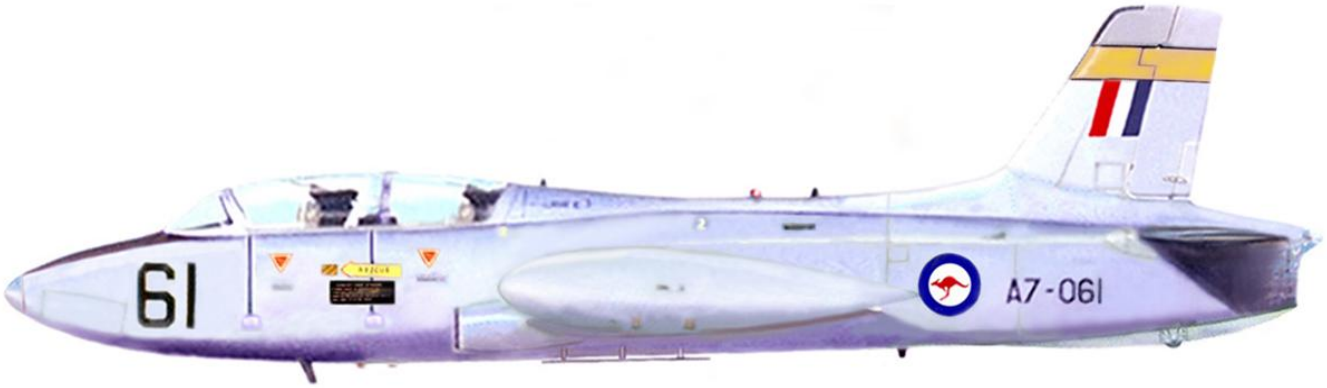
Light Series Bomb Carrier (LSBC) on A7-064 of 2(F)OCU in 1982

The LSBC carried 4 x 5kg light blue practice bombs on the wing pylon. For weapons training sorties, the load for 2(F)OCU Macchis could be the SUU-11B/A 7.62mm Minigun pod on the port pylon, and the LSBC with 4 x 5kg practice bombs on the starboard pylon.

The 5kg light blue (signifying a practice weapon) bomb was of a similar appearance to the Mirage's larger tear-drop shaped 25-lb BDU-33.

The LSBC on a Macchi with four 5kg practice bombs

2(F)OCU 1969-1971 SILVER



A7-061 in 1969 with the original, probably intended as interim, 2OCU tail design with a 10” band

Macchis were allocated to 2(F)OCU at Williamtown in OCT 1969, gradually replacing the Vampire aircraft as the interim weapons trainer between ‘wings’ graduation and Sabre conversion. [42] With 5OTU reforming on 1 APR 1970, Macchis were divided between 5OTU and 2OCU (5OTU responsible for fighter lead-in training, 2OCU for Mirage conversion and operational training). In JUL 1971, Macchi advanced training responsibilities reverted completely to 2OCU, and from SEP 1971 to DEC 1984, conducted Macchi/Mirage training and fighter combat instructor (FCI) courses. With the imminent arrival of the first F/A-18 Hornets, in JAN 1985 2OCU Macchis passed to 77SQN.

2(F)OCU Silver Macchi Tails

Initial 1969 tail, in 1970 to 5OTU

Revised yellow tail 1969-70

The original position and size of the standard 18”x15” fin flash restricted the style of unit markings. This was soon changed in 1970, to a smaller 12”x12” more slanted flash, moved lower and forward, almost to the leading edge.

A7-065 off Williamtown with the standard 2OCU tail and 90-gal tip tanks

2(F)OCU 1969-1971 SILVER A7-059

Macchis were allocated to 2(F)OCU at Williamtown in OCT 1969, gradually replacing the Vampire aircraft as the interim weapons trainer between 'wings' graduation and Sabre conversion. [43] With 5OTU reforming on 1 APR 1970, Macchis were divided between 5OTU and 2OCU (5OTU responsible for fighter lead-in training, 2OCU for Mirage conversion and operational training). In JUL 1971, Macchi advanced training responsibilities reverted completely to 2OCU, and from SEP 1971 to DEC 1984, conducted Macchi/Mirage training and fighter combat instructor (FCI) courses. With the imminent arrival of the first F/A-18 Hornets, in JAN 1985 2OCU Macchis passed to 77SQN.

A7-059 at Williamtown 1969-70 showing the short-lived 2(F)OCU coloured 90-gal tip tanks

2(F)OCU 1971-1984 'FANTA'

A7-063 in the *Light Orange-White* 'Fanta Can' scheme introduced JAN 1970 and to WLM Macchis from 1971

Macchis were allocated to 2(F)OCU at Williamtown in OCT 1969, gradually replacing the Vampire aircraft as the interim weapons trainer between 'wings' graduation and Sabre conversion. [44] With 5OTU reforming on 1 APR 1970, Macchis were divided between 5OTU and 2OCU (5OTU responsible for fighter lead-in training, 2OCU for Mirage conversion). In JUL 1971, Macchi advanced training responsibilities reverted completely to 2OCU

Yellow tail on orange-white from 1971

Fuselage Roundel 18" (45.72cm) **Smaller Slanted Fin Flash 12" H x 12" W (4" per colour)**
Wing Roundels 33" **OCU Tail Marking 15" band** **Serial Number/Fin Number 8" x 5"**

The original position and size of the standard 18"x15" fin flash restricted the style of unit markings. This was soon changed in 1970, by a smaller 12"x12" more slanted flash, moved lower and forward, almost to the leading edge.

A7-061 2(F)OCU 1971

2(F)OCU CAM MACCHIS

From SEP 1971 to DEC 1984, conducted Macchi/Mirage training and fighter combat instructor (FCI) courses. From the late 1970s the Williamtown Macchis were camouflaged in the three-colour green/grey colours. With the imminent arrival of the first F/A-18 Hornets, in JAN 1985 2OCU Macchis passed to 77SQN.

2(F)OCU A7-063 at Williamtown 1984

Fuselage Roundel 18” (45.72cm) **Smaller Slanted Fin Flash 12” H x 12” W (4” per colour)**
Wing Roundels 33” **2OCU Tail Marking 15” band** **Serial Number/Fin Number 8” x 5”**

A77-077 with 2(F)OCU c1985, before becoming a flagship of the 77SQN fleet in 1985

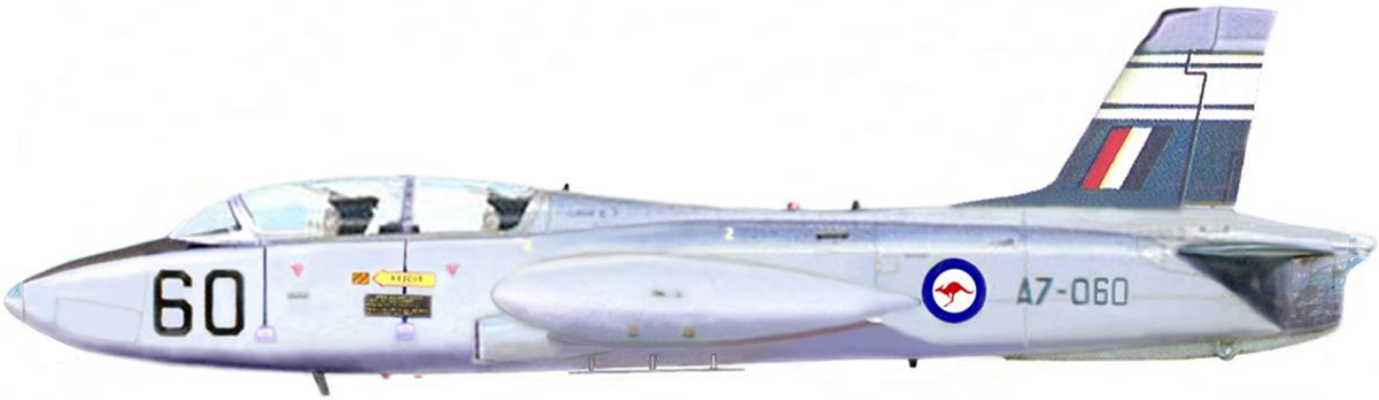
A7-087 ex-Navy N14-087 of 2(F)OCU without tip tanks

5 OTU MACCHIS 1970-1971

5 OTU was reformed at RAAF Williamtown in APR 1970 with responsibility for Sabre conversion and operational training preparatory to Mirage conversion, and divided into Instructional Flight and Operations Flight. Vampire flying was run down from SEP 1970, until being withdrawn completely by APR 1971. This left 5OTU with a fleet of 40 Sabres and eight Macchis, until the unit was disbanded on 31 JUL 1971.[45]

5OTU A7-065 in 1971 was probaly the last *Aluminium* finished Macchi delivered to the RAAF

Fuselage Roundel 18" (45.72cm) Original Slanted Fin Flash 18" H x 15" W (5" per colour)
Wing Roundels 33" 5OTU 'GT' striped Tail Marking Serial Number/Fin Number 8" x 5"

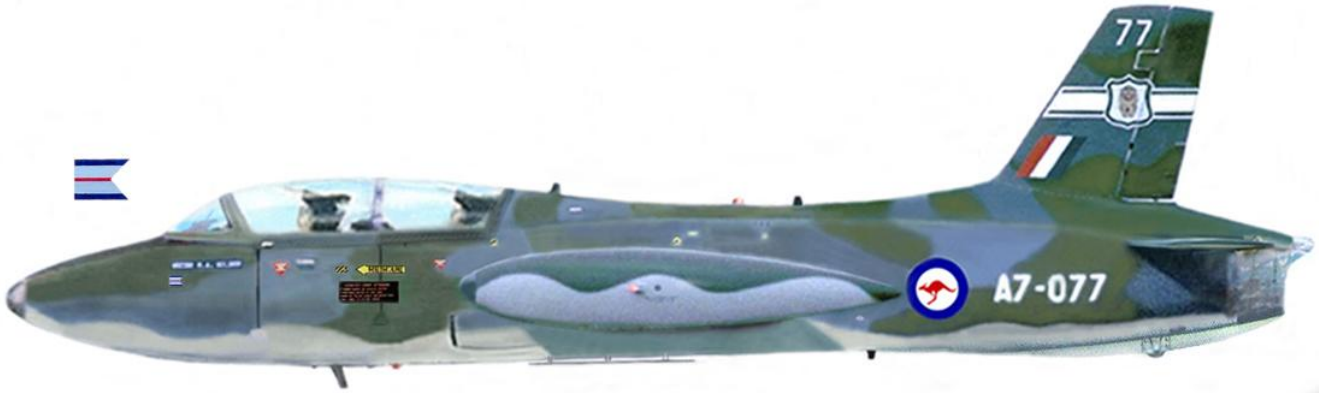


A7-059 behind Sabre A94-366 5OTU 1971

77SQN MACCHIS 1985-1989

In JAN 1985, in preparation for the introduction of the F/A-18, 77SQN absorbed all Mirages and Macchis of 2(F)OCU and assumed responsibility for fighter combat instructor, introductory fighter, and Mirage conversion courses. The transfer swelled the squadron's strength to 56 aircraft – 40 Mirages and 16 Macchis. Along with a heavily expanded training program, and its existing Australian Army close support role, 77SQN's fleet support commitment was increased to take over from the loss of the RAN fixed-wing capability. The squadron began phasing out the Mirage in JUL 1986, took delivery of its first Hornet in JUN 1987, and passed the Macchis to 76SQN in JAN 1989.

A7-077 of 77SQN c1985

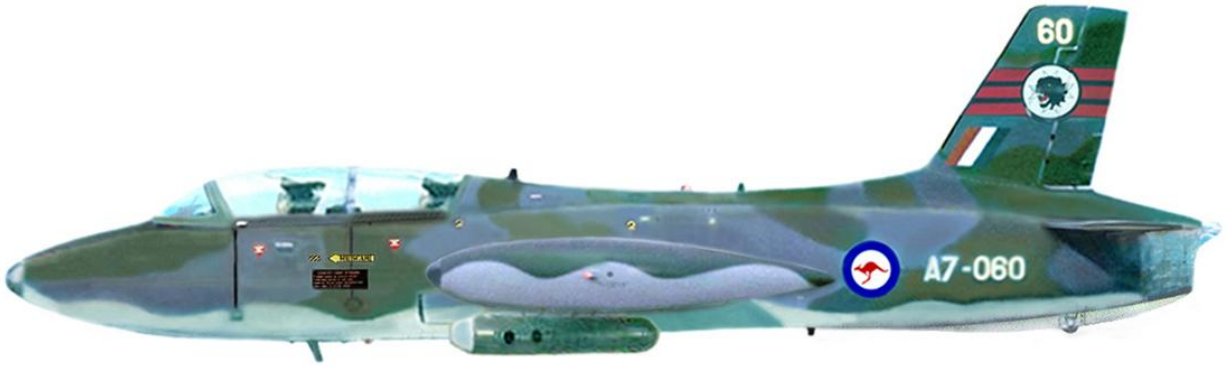


Fuselage Roundel 18” (45.72cm) **Smaller Slanted Fin Flash 12” H x 12” W (4” per colour)**
Wing Roundels 33” **77SQN Tail Marking 10” band, 18” crest** **Serial Number/Fin Number 8” x 5”**

76SQN MACCHIS 1989-2001

In JAN 1989, 76SQN reformed 16 years after disbandment, equipped with the Macchi and Winjeel.[46] The Winjeels operated in the FAC training role until 1994, and the Macchis flew Navy and Army fleet and ground support roles. An important role for 76SQN was the lead-in fighter role, which became the Introductory Fighter Course with students typically being from 25SQN Macchi flying at Pearce. Gradually replaced by the Hawk from late 2000.

76SQN A7-060 3-colour camouflage



Fuselage Roundel 18” (45.72cm)

Smaller Slanted Fin Flash 12” H x 12” W

76SQN Tail Marking 15” band

An image of 76SQN A7-080 over Stockton beach, in the final 1990 all-over *Extra Dark Sea Grey* (EDSG) scheme

76SQN MACCHI ANIVERSARY SCHEMES 1992 / 1997

76SQN introduced a spectacular 50th Anniversary marking in 1992 marking 50 years of the Squadron, which coincided with 25 years of the Macchi in Australian service (1967-1992). The fin flash was further reduced to 9”x9” with a white border. This scheme was applied to A7-070, when overall EDSG was the standard Macchi finish.

76SQN A7-070 in the 50th Anniversary scheme

[ASO imagery]

In 1997, 76SQN introduced a new Anniversary scheme for A7-022, this time for 55 years of 76SQN and 30 years of the Macchi. Both aircraft are shown above in 1997 at Williamtown.

25SQN MACCHIS 1989-1998

In OCT 1989 it was announced that 25SQN would resume flying operations, operating the MB-326H, and in JAN 1990 25SQN also received Pilatus PC-9 to use with the Macchi. [47] 25SQN had a unique status, providing newly graduated pilots with proficiency training, in preparation for their fighter lead-in training, and providing fleet support for RAN vessels operating from HMAS Stirling – the first Reserve unit since 1960 with a flying role. All-over *EDSG* (grey) was introduced from 1990. 25SQN relinquished its flying role – and Macchis – to 79SQN in JUL 1998.

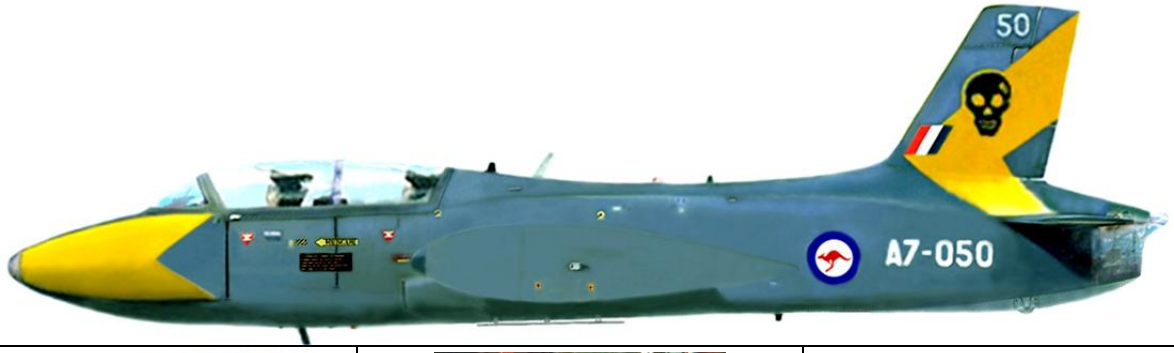
25SQN **RAAF RESERVE** Marking

A7-048 with A7-094 – the yellow markings aided tactics training, and visibility in the congested Pearce circuit. This yellow marking first appeared in 1998, and was subsequently retained by 79SQN Macchis.

79SQN MACCHIS 1998-2001

25SQN, as a Reserve unit, was responsible for providing newly graduated pilots with proficiency training, in preparation for their fighter lead-in training, until handing this role to the reformed 79SQN at Pearce in JUL 1998 (79SQN having disbanded with the Mirage at Butterworth in JUN 1988) [48]. The Macchis continued with this role until replaced by the Hawk in March 2001.[49] The large UHF blade aerial behind the cockpit had been added in 1995.

79SQN Macchis camouflaged A7-041, and grey (EDSG) A7-050



In MAR 2001, as 79SQN replaced Macchis with Hawks, A7-096 received a special *Burgundy/Gold* fin stripe and 'Rising Phoenix' badge. A7-096 was flown to RSTT Wagga a few days later; this 79 marking passed on to the Hawk.

A7-050 showing all-over *EDSG* and the yellow visibility markings inherited from 25SQN in 1998

A7-047 CHIEF OF AIR STAFF 1987-88

The Chief of Air Staff, Air Marshal Ray Funnell (CAS over 1987-92)[50], had CFS Macchi A7-047 maintained for him by 34SQN at RAAF Fairbairn over 1987-88 for about a year. It was replaced in this role by PC-9 A23-006, which had a similarly spectacular light blue scheme, and flew in the SEP 1988 Around Australia Bicentennial Air Race.

CAS's A7-047 marked as "Office of the Chief of the Air Staff" (CAS) c1987, before the Chief's office was changed to "Chief of the Air Force" (CAF) in 1997. Overall scheme was high gloss Red, White and Blue with the RAAF Eagle and Crown on the tail. The ejection seat warning triangles and rescue and warning markings under the cockpit were repositioned. Maintenance markings were applied in a light grey. Flying surface leading edges (with the exception of the tip tanks) were finished in gloss white instead of the standard gloss grey. [51]

A7-047 CAS in 1987 – the aircraft is now at the RAAF Amberley Heritage Centre for restoration

Navy Macchis

In 1969 the RAN ordered ten Macchis to replace the Vampires as its advanced trainer at HMAS *Albatross*.[52] In JUL 1970 the first Navy Macchis were delivered to 724 Squadron (VC724) at Nowra. This was a remarkably short lead time of order to delivery – obviously some RAAF orders were shuffled to allow this for the Navy, and it just goes to show what can be achieved with a functional aerospace industry. Six aircraft were received over JUL-NOV 1970 (serialled N14-073 to N14-078, coded 864 to 869), then RAAF deliveries resumed. The Navy's final four of the order (N14-084 to N14-087, coded 860 to 863) were received over JUL-SEP 1971.[53]

N14-076/867 on the CAC production line in 1970, in 'Fanta' *light orange/white*

Overall Finish and National Markings

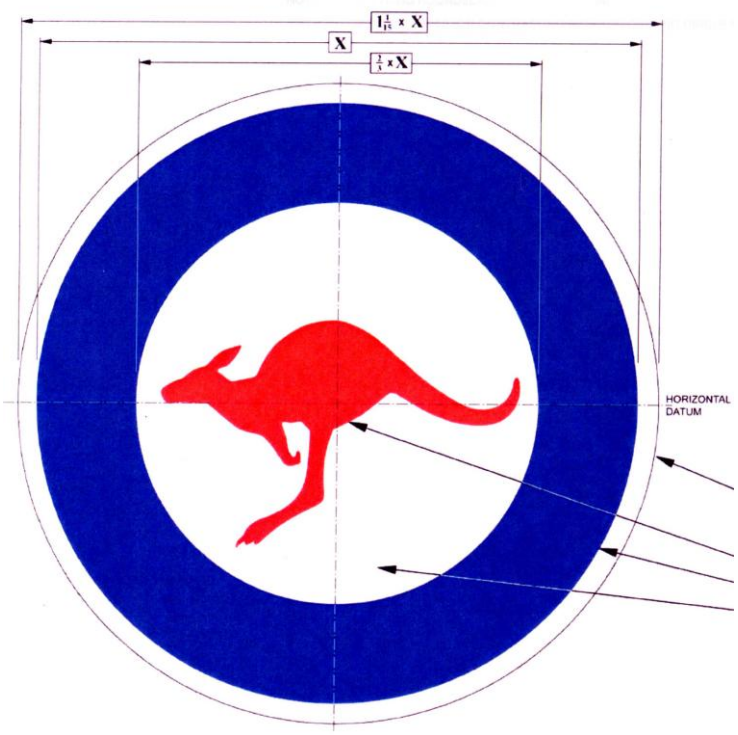
RAN Macchis were welcomed to replace the aged and non-standard fleet of Vampires, and not only fulfilled the role for instructional check rides, but like the RAAF's Williamtown Macchis, were weapons capable. VC724 aircraft were armed with the 7.62mm miniguns and 4kg practice bombs for training at the Beecroft air weapons range at Sussex Inlet. Navy Macchis were delivered in standard RAAF 'Fanta' orange/white – without the fin flash, and with 'NAVY' marked across the tail and tip tanks.

N14-084/860 original 'Fanta Can' scheme in 1974

From 1973, the Navy 'Fanta Can' scheme was changed to the eye-pleasing overall *Oxford Blue* BS381C-105 and white, with white detailing. The fin was blue while the rudder was white, and lower surfaces remained *Aluminium*. This was arguably the most eye-pleasing scheme of Australian Macchis.

N14-075/866 (note abbreviated to '6' on the top of the rudder) flying a Snowy route in 1981, N14-074 (below)

The roundel was changed to the 'cutting circle' design – where a thin white outer circle demarcates the roundel blue from the blue background – which increases the overall 18" roundel diameter by 1/15th.



'Cutting Circle' Roundel [54]

Nowra Codes

The following Nowra 'nose number' codes were allocated to the ten Macchis:

Serial	Code	Date Allocated	Serial	Code	Date Allocated
N14-073	864	JUL 1970	N14-084	860	JUL 1971
N14-074	865	JUL 1970	N14-085	861	AUG 1971
N14-075	866	SEP 1970	N14-086	862	AUG 1971
N14-076	867	OCT 1970	N14-087	863	SEP 1971
N14-077	868	OCT 1970			
N14-078	869	NOV 1970			

At least six of the aircraft had the last digit of the code repeated at the top of the rudder.

N14-076/867 of VC724 with the individual last number of the code at the top of the rudder

Squadron Markings

After the colour scheme change to *Oxford Blue*, the VC724 yellow chevron marking was added to the fin, but some aircraft retained the 'NAVY' across the tail. One notable exception was the 'barge' of *Albatross's* Captain, N14-086/862, which was marked with a yellow albatross across the tail. VC724 aircraft normally had a transfer of the squadron badge either side of the nose, but apparent in some images is that the transfer did peel off.

863, 866 and 868 with 'NAVY' and yellow VC724 tail chevrons

1983 – The Sad Demise of Naval Fixed-Wing

In 1982, the Federal Government announced the decommissioning of the carrier HMAS *Melbourne*, which originally was to have been replaced by HMS *Invincible* (reportedly to have become HMAS *Australia*). However, the Brits had had a change of heart after the success of the carrier-led Task Force in the 1982 Falklands War, so *Invincible* was now no longer available. HMS *Hermes* was offered as a substitute, and this was wisely rejected. In 1987, *Hermes* ended up with the Indian Navy as a Harrier-carrier as INS *Viraat*.

With the cessation of naval fixed-wing flying, the eight remaining Macchis were withdrawn from VC724 in JUN 1983, with four being absorbed immediately into 2(F)OCU at RAAF Williamtown.[55] Of the other remaining aircraft, three were stored at RAAF Laverton and another joined ARDU, in a mixture of markings (see below). Meanwhile, the Navy's A-4G and TA-4G fleet were sold to the RNZAF for conversion to the A-4K/TA-4K *Kahu*.

A7-086 of ARDU in 1983 with a mix of markings – 'N14-086' has become A7-086, and the RAN code '862' has been conveniently reduced to '86' to reflect the RAAF serial number's last two

The loss of organic fleet air support within Navy meant that this role was taken over by the RAAF. While the Hornet sometimes filled this role, it was expensive to operate, and had limited training value for the air force. Accordingly, the small No.2 Squadron RNZAF, flying the A-4K Skyhawks, was leased and took up residence at Albatross for fleet support. This A-4K unit incorporated some *Kahu* upgraded ex-RAN A4Gs. When this RNZAF agreement ceased, fleet support tasking was taken over by Williamtown-based Macchis, while Pearce-based Macchis supported Navy's Fleet Base West. Subsequently this role then passed to the Hawks of 76SQN and 79SQN.

NAVY MACCHIS 1970-1983

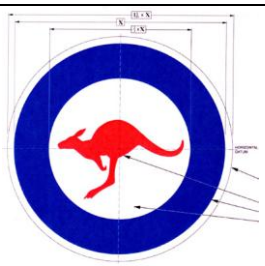
N14-076/867 shows all characteristics of Navy Macchis – *Oxford Blue/White* scheme with *Aluminium* undersurfaces, Nowra 860-series code number on nose with last digit repeated on the rudder, VC724 badge on the nose and unit chevron on the fin, 'NAVY' on the 90-gallon tip tanks.

N14-077/868 was transferred to the RAAF in 1983, and later eagerly accepted by 77SQN as A7-077

NAVY MACCHI N14-086 '862' ALBATROSS

The Albatross tail was added for the Captain of HMAS *Albatross* from early 1973.[56] With the cessation of naval fixed-wing flying, the eight remaining Navy Macchis were withdrawn in JUN 1983, with four being absorbed immediately into 2(F)OCU at RAAF Williamtown.[57]

N14-086/862 with Albatross tail



'Cutting Circle' Roundel

90-gallon tanks was standard for Navy

N14-086/862 with Albatross tail, 'NAVY' tip tanks, and VC724 badge

MACCHIS IN MUSEUMS

A7-001 RAAF Museum PCK, also A7-097 stored

A7-004 RAAF Wagga 2014, to be gate guard

A7-026 SAAM 2013

A7-027 gate guard at RAAF Pearce 2012

A7-030 in 2016 was mounted at HARS, Albion Park

A7-047 moved in 2014 to RAAF AMB Heritage Centre

A7-052 as “A7-076” memorial at RAAF Williamtown

A7-054 Benalla Aircraft Museum 2013

MACCHIS IN MUSEUMS 2

A7-057 Merredin Military Museum WA in 2011

A7-062 at Fighterworld Williamtown NSW

A7-064 Edinburgh, 2014 to RAAF AMB Heritage Centre

A7-066 as "A7-025" RAAFA Bull Creek WA

A7-067 Fighterworld Williamtown in 2010

A7-077/N14-077 at FAA Museum *Albatross*, 2011

A7-081, new gate guard at RAAF East Sale MAY 2018

A7-087/N14-087 at Cranbourne RSL Vic 2014

No 3 SQUADRON A.F.C.

PART II – AERIAL RECONNAISSANCE

> *It is no child's play to circle above a German battery observing for half-an-hour or more, with your machine tossing about in the air, tortured by exploding shells and black shrapnel puff-balls coming nearer and nearer to you like the ever-extending finger tips of some giant hand of death. But it is just a part of the never-ceasing war. In the air service this work is never finished. Everywhere along the line the big guns wait daily for the wireless touch of the aeroplanes to set them booming at targets carefully selected from previous observation.*
>
> Colonel "Billy" Bishop VC [59]

By late 1917, it had become evident from the fighting in Flanders that large scale battles were no longer possible without adequate air support. Ensuring success on the ground not only required possession of aerial superiority, but also aircraft were required to provide additional methods of assisting the land battle. To achieve an integrated force, RFC squadrons were evenly distributed along the front with each Army allocated an RFC brigade, comprising an Army wing and a Corps wing. During August 1916, in line with the offensive policy of the RFC, all scout squadrons had been attached to the Army wings, to take the fighting further across the front in a "strategic offensive", and subdue enemy air power far away from interfering with the Corps squadrons flying in direct support of the land forces.[60] To enable such an offensive policy, later that year the RFC had implemented a plan to field twice the number of fighter squadrons than there were Corps squadrons.[61]

The Germans' defensive policy saw them employing air power differently. They used their fighting formations where they were most needed, constantly reacting along the front as the situation demanded. The majority of enemy single-seat scouts were only sent up when the RFC was most active. Special air defence observers (*Luftshutz Offiziere*) were stationed well forward to report the movements of RFC aeroplanes, and this reporting would bring the German fighters into action. As a result of the offensive nature of RFC operations, ninety percent of air battles occurred over the German side of the lines. Although such defensive operations over their own territory allowed the Germans, when disadvantaged, to spin down out of trouble, it did deny their Army effective air support: German aircraft were not harassing the Allied lines. Furthermore, German reconnaissance capabilities had been diluted, with many aircraft being diverted to continuous defensive patrols, which they soon found to be unsustainable and unsuccessful. Such a defensive policy led General von Hoeppner, Commander of the German Air Service, to record that such activity was a "waste of strength to the detriment of our own reconnaissance work".[62]

Being the unit tasked to support I ANZAC Corps, along the River Lys south of Ypres, 69 (Australian) Squadron was controlled by the Corps Headquarters. During the second half of 1917, the artillery-fire on both sides in the Ypres area was the most devastating of the whole war. The British offensive had ceased at the end of autumn, as the Allies won what remained of Passchendaele Ridge. As the Corps reconnaissance squadron, the Australian airmen assumed the variety of roles that had evolved for tactical air operations – artillery cooperation to direct gunfire; photography of enemy positions; observation of German activity behind the trenches; bombing when required; contact patrols with advancing infantry to report on changes at the Front; counter attack patrols after such an advance to watch for signs of an enemy counter-attack; and retaliation patrols by attacking the enemy trenches. With the static trench warfare situation, 69 Squadron's 'A' and 'B' Flights conducted artillery patrols and observation, with 'B' Flight also conducting counter-attack patrols.[63] 'C' Flight was the infantry, or contact patrol, flight – Corps Commander Lieutenant General Monash expected 'C' Flight would keep his headquarters "rapidly and minutely informed, from moment to moment, of the situation of the Infantry in actual contact with the enemy".[64] All three flights were available for photography.

Of all these tasks, most of the work was either artillery cooperation or undertaking photographic reconnaissance. The latter involved continual photography of the whole Corps front, taken at regular intervals, typically once a fortnight. 3 Squadron pilot Lieut Nigel Love recorded:

> This photographic reconnaissance normally would take in an area of up to 4,000 yards [four kilometres] behind enemy lines and would extend at intervals along the whole of the Corps front which was usually about twelve miles [20km]. The photographs themselves were usually taken from a height of about 8,000 feet and were exposed vertically from a camera fitted in the observer's cockpit…at such intervals of time as would provide a reasonable overlap of each picture.[65]

The Thornton-Pickard Type C aerial camera was the standard fit for RFC reconnaissance aircraft

To undertake this reconnaissance, aircraft were fitted with oblique and vertical cameras which were loaded with photographic plates. The first aerial cameras were for oblique angles, to give a "bird's-eye" view. The camera was held or fixed over the side of the aeroplane, as it flew low over the target, typically at a height of 1000 to 1500 feet.[66] In February 1915 an improved conical box-camera with its lens set at a fixed distance from its 4-inch by 5-inch plate had been developed by the British. The operator held the camera by handles or straps, operating the equipment manually, and great skill was needed to produce reasonable photographs. Oblique photography continued to be practised until the war's end, for it was particularly valuable in obtaining information details of the enemy trench system and back areas before an offensive. Vertical photographs were taken from greater heights; the first British cameras employed for this work were mounted on the outside of the rear – the pilot's – cockpit on such machines as the B.E.2, and they were operated by the pilot. As one reconnaissance pilot at that time recorded, the aerial camera was a big square, shiny mahogany box, clamped on the side of the fuselage, with a handle on top to change the plates:

> To make an exposure you pulled a ring at the end of a cord. To sight it, you leaned over the side and looked through a ball and cross-wire finder. The pilot, then, had to fly the machine with his left hand, get over the spot on the ground he wanted to photograph, put his arm out into the seventy-mile-an-hour wind, and push the camera handle back and forward to change the plates, pulling the string between each operation. Photography in 1916 was somewhat amateurish.[67]

However, from 1917 onwards, the camera was installed internally behind the rear cockpit, now occupied by the observer; by means of various mechanical devices, such as a Bowden cable, the pilot took the photographs, with the observer changing the plates. Photographs for map-making purposes were taken from 8,000 feet in order to include as large an area as possible.[68] Also from this height, it was possible that enough overlap could be achieved with successive prints to enable a complete mosaic of a photographic map to be assembled after flight. Corps machines such as the R.E.8 took shots of enemy trenches; rear areas were photographed by Army reconnaissance aeroplanes.

The first major use of vertical photography had been in March 1915, when the RFC photographed the entire German trench system in front of the British First Army, in preparation for an attack on Neuve Chapelle.[69] The resulting maps played a vital part in the fighting, and this battle became the first to be fought and won by the science of aerial photographic reconnaissance.[70] Initially on the R.E.8, the vertical Thornton-Pickard camera was mounted on a frame[71] (on the port fuselage beside the pilot) and could photograph through the open panel in the lower wing

centresection. This had been improved by the time 69 Squadron arrived at the Front, with the camera being mounted behind the observer, and photographing through a square aperture in the underside of the fuselage.[72] As more and more photographs were taken, the dissemination of prints became ever wider, particularly to the infantry. Most of the photography, when processed, formed a composite map, or picture, of the area. Recognising the importance of photography, the RFC opened a School of Photography at Farnborough in January 1917.[73] Later that year, the army too recognised the vital importance of photography for intelligence to the infantry in the line, and raids would not generally be planned without such information.[74] Attacking forces could become as familiar with the main features of enemy territory to be captured as they were with their own lines. On 69 Squadron, all this processing, printing and mapping work was the task of the photographic section, which disseminated its product for immediate Army requirements and retained the prints in a library, for subsequent reference for crews conducting counter-battery "shoots" and for intelligence use.

In addition to photographic reconnaissance, the first time that aircraft cooperated with artillery in battle was also during the British push at Neuve Chapelle in March 1915.[75] To conduct such artillery cooperation, a means of communicating was required, and this initially only involved one-way wireless transmission from the aeroplane. For communications from the aircraft, the wireless set had to be as light and compact as possible: artillery-spotting and reconnaissance two-seaters were by no means overpowered or roomy. The early wireless sets were clumsy and heavy, weighing about 75 pounds (35kg) and filling the cockpit. By late 1915, the Sterling set had been reduced to less than 20 pounds (8kg), and this became the standard British wireless-transmitter for Corps work.[76] The Sterling No.I was a transmitting-set with no reception facility, and had a range of up to about ten miles (16km). On the ground, the artillery battery received the morse signals from the aircraft on a Short Wave Mark III crystal receiver.[77] A further enhancement to the aeroplane wireless was the introduction of the "clapper-break" which varied the pitch of the transmitted morse tone, and enabled the ground operator to distinguish different aircraft transmissions on the same radio frequency. A Sterling transmitter gave a high note, but could be tuned when fitted with clapper-breaks to give a low or medium note.[78] This allowed two flights of each Corps squadron to be fitted with clapper-breaks to operate Sterling transmitters with identifiable characteristics.

The R.E.8's transmitter aerial consisted of 36 metres of stranded copper wire with a 3-pound (1.5kg) lead weight on the bottom. The wire was wound onto a drum in the observer's cockpit, the end leading down through an insulated gland in the floor. To allow the aerial to run out, a brake on the drum was released, and after the "shoot" it was wound in manually and held securely by its brake with the weight against the bottom of the gland. A later refinement allowed the whole aerial to be quickly jettisoned if the machine was attacked by enemy aeroplanes (EA). The R.E.8's Type 52A transmitter operated by a wind-driven alternator, and was supplemented late in the war by the 'W' continuous wave transmitter which worked by a 600-volt wind-driven generator. These sets had a range of up to 130km, but again were not fitted with receivers. Longer-range Army R.E.8 squadrons, carrying out strategic reconnaissance, had the Type 54A set powered by rechargeable battery accumulators.

Perhaps the most important new role of the aeroplane during the 1916 Somme offensive was the contact patrol, or direct support of the infantry. Contact patrol aircraft communicated with the advancing infantry by using one signal, a series of morse code "A"s (*dit-dahs*) sounded by a Klaxon horn, signifying a request to light flares. The leading infantry then lit their flares, to show to the aircraft the forward line of advance.[79] Wireless was only used by contact patrols to send targets to the artillery.[80] Contact patrol work necessitated flying at very low altitudes, and the risk to the aeroplane and crew to enemy groundfire was high.

Sir Henry Rawlinson, Commander of the British Fourth Army, after the initial British success at the Somme in the summer of 1916, had reviewed the statistics of air/army cooperation and acknowledged "the enormous importance of aeroplane and artillery cooperation".[81] Furthermore, the Germans too realised this British success was due to the superiority of air cooperation with artillery. The value of air support for counter-battery work was expressed by German Chief of General Staff, General von Hindenburg, later that year:

> To engage the enemy's artillery (with the help of aeroplane observers) is the principal and most effective means of fighting a defensive battle to a successful conclusion. Should this succeed, the enemy's attack is absolutely paralysed.[82]

As a result, in February 1917, the Germans introduced wireless reception apparatus for their artillery-observation machines and after some difficulties were able to perfect it. The Allies were somewhat slower and although continuous wave receivers and even wireless-telephone sets were employed in 1918, their use did not

become widespread. The only British Corps two-seaters equipped with receivers were the Bristol Fighters issued in small numbers for long-distance artillery work late in the war; they had CW Mk III receivers and 52A CW transmitters.[83]

To send messages to the artillery battery, the R.E.8 crew observed the fall of shot, and transmitted to the battery by a "clock code" system. This new system of reporting the fall of artillery in relation to the target had developed during the Neuve Chapelle operations. The clock code took the target as being the centre of a clock face, with 12 o'clock pointing true north. Imaginary circles with the target as centre at radial distances of 10, 25, 50, 100, 200, 300, 400 and 500 yards (metres) from the target were lettered Y, Z, A, B, C, D, E and F respectively. "OK" indicated the exact centre. The pilot, who invariably conducted the shoot as he could easily manoeuvre the aeroplane to exactly where he wanted it, noted the shell bursts with reference to the imaginary circles and clock hours. While the observer kept watch for enemy aircraft and other hostile batteries opening fire, the pilot signaled the result by giving the letter of the smallest circle within which the shot fell, followed by the hour of the clock indicating its direction from the target.[84] For example, a round which fell 80 yards west of the target would be reported as B9, indicating less than 100 yards from the target and due west of it. The clock code proved satisfactory and remained in use for many years.[85] The R.E.8 could also transmit various codes to the ground, such as "GG" meaning "fire", "LL" meaning all batteries open fire, "GF" fire on enemy troops or motor transport, "NF" neutralising fire on active enemy artillery, "NT" enemy guns silenced, or "ACNF" for "German battery firing".[86]

For the R.E.8 crew to receive messages from the battery, as their wireless communications worked in only one direction, a system was devised whereby the battery crew would display panels on the ground so that the aircraft could be advised of new instructions. The ground panels were large white calico strips laid out beside the battery wireless station. In winter, when the ground was covered with snow, the strips were of red or black cloth.[87] The cloth strips measured one metre by six metres, and when laid out in various forms represented the following messages:

one strip I	"not receiving messages"
two strips II	"we are receiving your signals"
three strips III	"no"
letter L	"yes"
letter H	"signals weak"
letter T	"come to ground", or "go home"
letter X	"ready to open fire"
letter V	"observe for fire effect"
letter Y	"repeat last observation"
letter Z	"observe for schrapnel" [88]

So that the battery could recognise the Corps reconnaissance aeroplane it was working with, markings had been applied to aircraft to provide identification. Although reconnaissance aircraft were camouflaged so they could perform their roles unobtrusively, since 1916 different squadrons had white markings to identify themselves. These markings took the form of white geometrical shapes or bars on fuselage sides, and were sometimes repeated on top of fuselage. 69 Squadron R.E.8s were identified by a large white disk painted on the fuselage side, just behind the roundel (the British national marking).[89] But from March 1918, unit markings (for all except fighter squadrons) were banned in order to confuse German Intelligence. However, large individual letters remained marked on the fuselage.

The third role that Corps squadrons performed was the contact patrol – keeping in contact with the advancing troops to relay the results of their advance. Early trials of this form of cooperation during the Somme battle in 1916 had shown that for contact work the use of a Klaxon horn was most effective.[90] The contact aeroplane overhead would blow its horn – a distinctive note easily heard on the ground – and this was the signal for the advancing infantry to light flares to indicate their position. This information was passed back to the appropriate headquarters by a message bag dropped by the contact aeroplane, and followed up by a personal report when the observer landed. By May 1917, the counter-attack patrol was brought into general use.[91] This further form of support was maintained over the line after an infantry attack to watch for any signs of an enemy counter-attack.

With so much low level work, Corps reconnaissance aeroplanes were often subject to intense enemy groundfire, representing as much as a threat as enemy fighting scouts. To cover attrition, over 1917, new aeroplanes were delivered to the RFC at the rate of 47% of the number of aircraft in each squadron every month; in 1918, aircraft losses increased this wastage to 52%.[92] "Archie" was the term universally used by allied airmen to signify anti-aircraft (AA) fire,[93] and throughout the war on the Western Front, German AA gunners were to claim 1,588 Allied aircraft.[94] However, sometimes Archie fire could be useful, as German Archie smoke was black, while Allied shells exploded with

white smoke. When the black Archie stopped its harassment, it was an indication that enemy scouts were approaching. Similarly this was signalled also by white warning puffs from friendly artillery.

69 SQN R.E.8 coded '13' (probably A4759, which became 'N') posed with pilot LT S Brearley and observer LT R Taylor 'C' Flight, at Savy on 22 OCT 1917 [95] [AWM E01178]

Appalling weather throughout November 1917 had hampered air operations, while the Ypres offensive was ending in stalemate in the muddy trenches below. At the beginning of December 1917, on the Messines front immediately south of Ypres, 69 Squadron's role was to locate enemy artillery shooting in front of I ANZAC Corps onto the ridgeline at Passchendaele. In support of this operation, the Squadron's first casualties in France occurred. On the morning of 2 December, Captain Henry Storrer and Lieutenant W Scott (A3755) were killed when their R.E.8 crashed taking-off from Bailleul. Storrer, the 'B' Flight Commander, had graduated on the 4th Flying Course at Point Cook, and had commanded the original *Ulysses* deployment of Squadron personnel from Australia in October 1916. He was replaced as Flight Commander by Captain John Duigan, who had designed and built the first aircraft in Australia with his brother at their farm near Melbourne (apart from the engine and wing coverings, made entirely of materials found around the farm, including local timber and piano wire). John Duigan had first flown the aircraft on 16 July 1910 near Kyneton, Victoria, and height and distance records were set at Epsom Racecourse, Bendigo, on 3 May 1911.[96]

69 Squadron had now encountered enemy scouts on several occasions, but on 6 December 'A' Flight was able to claim the Squadron's first aerial victory. Captain Anderson and Lieutenant Bell (A3815) engaged a German DFW two-seater over Messines Ridge.[97] This enemy reconnaissance machine was observed by an Australian artillery battery to crash in the enemy's lines. The lumbering R.E.8 reconnaissance machine also proved to be a worthy opponent to the formations of enemy scouts that initially viewed it as easy prey. Australian R.E.8 pilot Lieutenant Jack Treacy recorded the advantages of the machine in aerial combat:

> The only way to fight with an R.E.8 was to go into a circle when attacked. You tip up your side and put your engine full on and as soon as the fellow dived you pulled the stick back and made the circle tight. The German can't get inside and your man can stand and fire. You could always turn inside a fighter, and although the German is trying to get inside he can't. Never go into a spin because he can dive down the centre of the spin.[98]

Another aerial victory was claimed on 17 December, but this was not without loss, in what became one of the mysteries of 69 Squadron's war. While engaged that afternoon on artillery work, Lieutenant J Sandy and Sergeant H Hughes (A3816) had just commenced a shoot between Deulement and Armentières when they were intercepted by a formation of six Albatros D.Va scouts. Sandy engaged the single-seaters, sending one down which forced landed in the Australian lines.[99] While the unequal fight continued, another R.E.8, flown by Lieutenants E Jones and K Hodgson (A3817) came to Sandy's assistance, and the remaining five enemy machines returned to their lines. Jones flew close to the other R.E.8 and identified it as Sandy's, with the crew apparently unhurt, and then returned to the aerodrome for more ammunition before returning to the line. Sandy's machine never returned, and the following day, it was reported as crashed near St Pol, with the two dead crewmembers. Apparently both the pilot and the observer had been killed in the aerial combat by a single bullet, and the R.E.8 had flown wide left-hand orbits until the fuel was exhausted, the north-east wind drifting the machine some 80km, towards Savy.[100]

69 (AUSTRALIAN) SQUADRON R.E.8 MARKINGS A3662/J SEP 1917 – MAR 1918

A3662 had been received by the unit in AUG 1917 and flown with the Squadron to France. Side ***numbers*** were initially allotted to aircraft, these being replaced within months by individual ***letters:*** 'J' indicated a 'B' Flight aircraft. It was inscribed as **Presented by Mr H Teesdale-Smith of Adelaide**, and was damaged landing in JUN 1918, and then despatched to No.2 Aeroplane Stores Depot (2ASD) at Candas.

A3662/J with the initial Squadron marking of a white disc, allocated in SEP 1917

A3662/J at Bailleul on 30 NOV 1917, pilot was Lieut Clark *[AWM E01359]*

New two-seater Corps reconnaissance squadrons were allocated unit markings on arrival in France; 69SQN R.E.8s were identified by a solid white disk painted on the fuselage side, just behind the roundel,[101] allotted on 19 SEP.[102] In March 1918, all unit markings were forbidden for all but the fighter squadrons on the Western Front.

The 'Airfix' model of A3362/J, which we made as kids

69 (AUSTRALIAN) SQUADRON R.E.8 MARKINGS SEP 1917 – MAR 1918

B5890/N was on 69SQN from OCT 1917 until wrecked in a crash on 15 MAR 1918

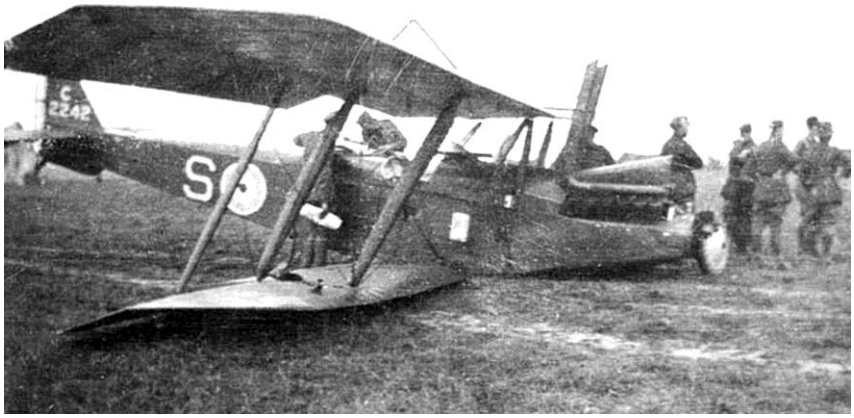
Overall PC10 *Khaki* from 1916.[103] The Corps reconnaissance squadrons had been allocated unit markings, with 69SQN R.E.8s identified by a solid white disk painted on the fuselage side behind the roundel from 19 SEP 1918, but was directed for removal from 22 MAR 1918.[104]

B5890/N's crash on 15 MAR 1918 *[AWM P00355.021]*

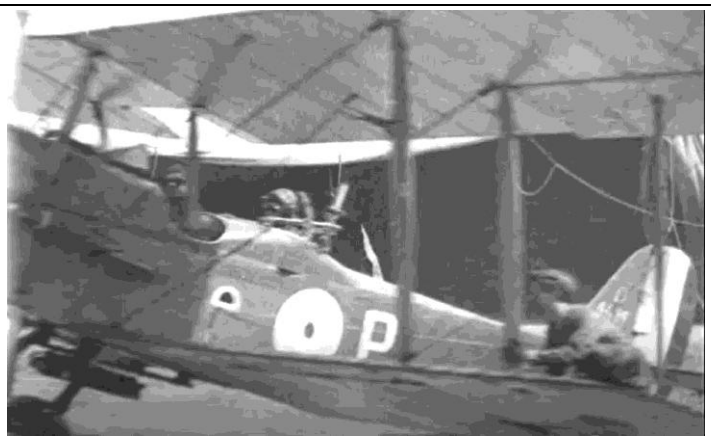
B3420/K gave 3SQN 'B' Flight long service from SEP 1917 to JUL 1918, until replaced by D4853

3 SQUADRON R.E.8 MARKINGS 1918

From MAR 1918 with the squadron circle marking deleted – this scheme until 3SQN's disbandment in FEB 1919.



C2242/S crash on 16 JUN 1918 *AWM P09378.005*



D4689/P in JUL 1918 was returned to the Depot and the end of that month

C2270/N crashed near Hamel 12 AUG 1918, and replaced by C2599

C2748/O "Sylvia" (Pengilley/Fenwicke) at Premont in OCT 1918 *AWM P01457.002*

The proximity of 69 Squadron's aerodrome at Bailleul, which was within 15km of the line, ensured the constant sound of war. Distant artillery fire was now joined by persistent enemy air raids. The aerodrome had been attacked early in the morning of 4 December, and during the afternoon of the 12th, the Germans attempted a heavy bombing attack. A large formation of 15 Gotha bombers, attacking from about 8000 feet, dropped large bombs on the eastern edge of the aerodrome. Their attack run had fortunately been hampered by British scouts and anti-aircraft fire and, apart from an unexploded bomb which fell between the hangars, no damage was reported. These air raids on the Australians' aerodrome would continue in early February.

During December 1917, the Australian high command decided to abolish II ANZAC Corps and to constitute a single Australian Army Corps. However, because of competing demands, it was not until April 1918 that four out of the five Australian divisions came together under the control of the Australian Corps Commander.[105]

The bad weather of heavy snow and poor visibility at the end of 1917 prevailed through to the New Year, and only occasional artillery work was possible. New Year's Day 1918 was a day of good visibility, which enabled the R.E.8s to conduct a highly successful reconnaissance of the Corps counter battery area. While the snow was on the ground, as much photography as possible was attempted, as new work, tracks to gun positions and blast marks stood out extremely well.[106] On this occasion, the Squadron was able to expose 116 photographic plates to cover a wide area, extending deeper into enemy territory than the usual Corps photographic area.

In anticipation of a large German offensive, on 16 January 1918, RFC Major General Trenchard issued his directive "The Employment of the RFC in Defence", which stipulated that although the army was on the defensive, the air offensive would be maintained. The first and most important duty of the RFC remained reconnaissance – watching for preparation of an attack. Every means were to be used in obtaining and transmitting information which would assist commanders in determining where, when, and in what force an attack might be expected.[107]

Later that month, on 20 January, a letter was received from HQ RFC changing the designation of the unit from 69 Squadron AFC to the 3rd Squadron AFC.[108] At last, since the first Australian squadron had sailed from Melbourne in March 1916, the Australian Flying Corps could be identified by its own unique sequence of squadron numbers. As if in celebration, five days later, 3 Squadron AFC claimed another "Hun". Lieutenants C Matheson and C Brown (B3431) were on an artillery reconnaissance near Deulement at 5000 feet, when they were attacked by two enemy DFW two-seaters. Brown opened fire with his Lewis gun and one enemy machine withdrew. He fired at the other aircraft, which was seen to go down in flames and crash in enemy lines.[109]

The following day, however, 26 January, saw an unusual loss to the Squadron, when Lieutenants C Donahay and J Blair (B2259) were despatched on an artillery shoot at Warneton, east of Messines. The weather proved unsuitable to conduct the shoot, and a little later an R.E.8 was observed to the west over Dranoutre, coming down steeply with its starboard wing folding back. Both wings then folded back and the machine crashed straight into the ground, killing the crew instantly. The accepted theory was that the aircraft had probably been hit by anti-aircraft fire over the line, and the R.E.8's main spar had weakened. The aircraft was so wrecked, that no investigation could determine the exact cause.

Another form of hostile groundfire was soon to become apparent: the danger in artillery spotting by being in the wrong point of the sky while directing a "shoot". This was brought home on 17 February, when a 3 Squadron R.E.8 sustained a direct hit from an 8-inch artillery shell. During a break in the bad February weather, Lieutenants H Streeter and F Tarrant (C5043) were engaged on a shoot and were shot down at Wytschaete on the Messines Ridge. At 1232 hours, the R.E.8 transmitted the "GG" signal to commence fire, and three minutes later the aircraft, flying at 5000 feet, was seen to disintegrate and the pieces fall to the ground. The 5th Australian Divisional Artillery signalled: "There were no EA in the vicinity nor were there any AA bursts in the air at the time. It is thought that the machine was hit by one of our own shells." [110] One 3 Squadron pilot, Nigel Love, recalled the top of the trajectory of an 8-inch howitzer shell was about 12,000 feet, and the need to remain out of the trajectory zone: if you felt the "shell bumps", your R.E.8 was too close.[111] Incredibly, only two hours later, in an extraordinary coincidence, an Australian 4 Squadron Sopwith Camel, piloted by Lieutenant C Martin, was also seen to suddenly break into pieces in the air, again probably hit by a shell.[112] These were incredible odds for two Australian aircraft to be lost by this rare occurrence on the same afternoon.

Bad weather continued for most of February, and observation had been possible on only 13 days during the month. However, although less work had been accomplished, the percentage of successful work was considerably higher. 90% of the pre-arranged shoots attempted during the month were successful, and 85% of Zone Call attacks

(when batteries were seen to be active and were then engaged) were successful.[113] Zone Calls had first been introduced to meet the conditions of open warfare by engaging targets of opportunity. In addition, on the rare day when weather was suitable, the whole Australian Corps Front was photographed – testament to 3SQN's efficiency.

Life on the ground at the aerodrome at Bailleul was now becoming uncomfortable. Concentrated enemy shelling of Bailleul town commenced on 12 March from German long-range guns, thought to be near Lille, some 25km away. The shelling continued through the month, and by 22 March the aerodrome became untenable, so 3 Squadron moved that day to Abeele, an aerodrome 15km to the north-west, just inside the Belgian border. The wisdom in withdrawing to the west became apparent the next morning, when the enemy guns hit the abandoned officers' quarters at the former aerodrome. The shelling killed Air Mechanic E Dewhirst and wounded an officer and corporal, all of whom had remained behind to pack the Squadron's remaining stores.

By late March 1918, 3 Squadron's reconnaissance efforts had indeed been successful. During January, the Australian airmen had put out of action 61 enemy artillery batteries, followed by 51 during February and a further 67 in March.[114] This activity was only possible as the Allies had now established air ascendancy on the Western Front. At the beginning of the war a British politician, Winston Churchill, had prophesied: "The only real security upon which sound military principles will rely is that you should be master of your own air." [115] The Allies would generally hold air supremacy until the end of the war. For now, the immediate urgency for 3 Squadron was the support of the Australian Corps, as part of the British Fourth Army, in the Somme valley.

As the Americans now poured into Europe, it was inevitable that the Germans would launch a further offensive as the weather improved to score a decisive victory before the full force of US might could be used against them. The long-range shelling of Bailleul was part of the wide program of the great German offensive, which began on 21 March against the British line near St Quentin. The new German offensive of 1918, known as the "Kaiser's Battle", or *the Great Battle of France*, was planned as an attack on a line Arras to La Fère towards Amiens, to drive a wedge between the French and British armies and push forward to take the Channel ports.

At the break of dawn in heavy fog on 21 March 1918, the German assault against the British Armies, the Third to the north and the Fifth on its right, began in the Somme valley around Arras. This resulted in the greatest battle of the war – the "Kaiser's Battle". The attacking infantry was supported by large numbers of ground strafing aircraft, as the Germans had built up their Air Service (*Feldfliegertruppen*), increasing the fighter force to 81 *Jagdstaffeln* and 38 ground attack, or "battle", squadrons – the *Schlachtstaffeln.*[116] The *Schlacht* concept was part of a new German doctrine for offensive action: to "shatter the enemy's nerve" by repeated attacks and obtain a decisive influence on the course of the fighting.[117] The two-seater ground attack *Schlasta* squadrons were under the orders of the ground force commander and were used only at the decisive point of an attack. This change in German doctrine from defence to offence had stemmed from German experience in fighting at the Somme during the summer of 1916, when the offensive policy of the RFC had achieved air dominance, achieving more of a victory in the air than had been possible on the ground. The battle in the air had been fought from beginning to end over enemy territory. Even when the numbers of hostile aircraft had been built up to almost equal the RFC, and when often their performance was superior, the German air policy had remained defensive.[118]

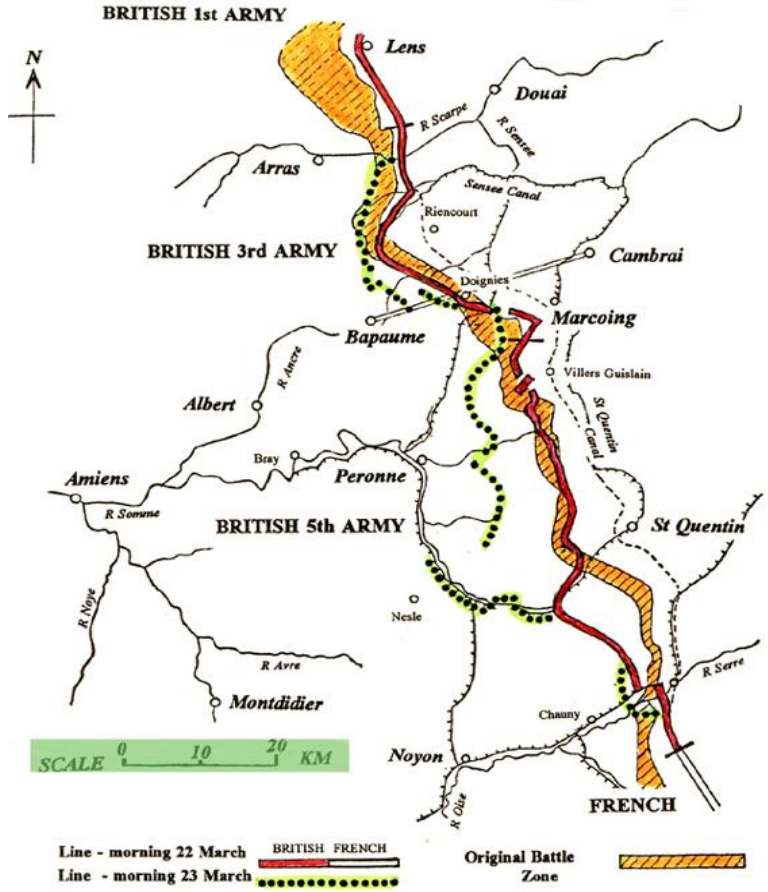
From 1916, the RFC had been better trained and better armed and was able to successfully conduct artillery observation, photography and cooperation with the infantry. Success had been achieved by practising these techniques before the battle, and also by ground units gaining an understanding of the capabilities of air power.[119] The new German approach was contained in a memorandum written in January 1917 by General Otto von Below, the commander of the German First Army opposite the British, where he encapsulated his belief in *"doing to the English what they are doing to us"*, and stated:

> The main object of fighting in the air is to enable our photographic registration and photographic reconnaissance to be carried out, and at the same time to prevent that of the enemy. All other tasks, such as bombing raids, machine gun attacks on troops, and even distance reconnaissance in trench warfare must be secondary to this main object.[120]

German aircraft had become increasingly active during March 1918, in preparation of the Ludendorff offensive.[121] Enemy air activity, by the simple means of concentration of force on one front, meant that the *Jasta* units held undisputed local aerial superiority, and this made RFC reconnaissance activities almost impossible. Such concentrated enemy air defence made RFC reconnaissance aircraft losses high, and this was further compounded by anti-aircraft fire from the ground. But it was not always hostile groundfire, as each army fired on all aircraft, irrespective

of markings. The German ace von Richthofen recalled from his time as a soldier: "…every aeroplane we saw was fired upon…with perfect impartiality".[122] The combination of this meant there was little successful Allied reconnaissance, the intelligence of the enemy's intentions was totally inadequate, and the enemy attack on the Somme came as a surprise to the Allies.

When the battle commenced on 21 March, poor weather initially prevented the planned use of aeroplanes by both sides. As the weather improved, the *Schlasta* supported the German troops on the ground by continually attacking Allied lines from low altitude with machine-gun fire and hand grenades. It was one of the first examples of German offensive use of air power in the war, as not only did the ground attack machines perform this duty over the Front, but they also harassed reinforcements up to 15km behind the lines.[123] However, even though the Germans had been able to assemble such a force, the Allies now held air superiority.



The Western Front 23 March 1918 (the 4th Army relieved the 5th on 28 March)

With the German advance, the land battle was now open warfare – officially termed "active and continuous operations" – and the duties of the Corps squadrons were rearranged. As a result, 3 Squadron's operations now had to be more flexible in support of this mobile warfare, and instead of the pre-briefed shoots, the artillery patrols located enemy batteries as they appeared. By a "Zone Call" system, the R.E.8s requested counter-battery fire whenever enemy guns were observed firing. Despite poor weather on 23 March, for instance, four batteries were knocked out by the Squadron on pre-briefed shoots, while a further 26 were engaged by Zone Calls.[124] Similarly the following day, seven batteries were destroyed on pre-arranged shoots, and a further ten engaged by Zone Calls. By this stage, the rapid German advance towards the Somme had seen Bapaume taken from the hard-pressed Third Army, and the line was now falling back towards Pozières, Albert and the River Ancre.

Bad weather prevented large scale operations over the next days, but it was still necessary for aeroplanes to fly over the lines in anticipation of further enemy advances. Such conditions led to a fatal crash on 25 March, when Lieutenants Sell and Millington (A4439), returning from an early morning artillery patrol, could not locate the aerodrome in the thick ground mist. Their R.E.8 crashed near Cassel, stalling while attempting a forced landing in a field, and the pilot was killed.

After days of frustration with impossible weather, the month ended with a brief period of good visibility on the late afternoon of 31 March, and as much work as possible was undertaken. Despite the poor weather of the month, 3 Squadron had achieved the most significant results within its parent 2nd Wing. The Squadron had

observed the most flashes from hostile batteries, had sent down the most Zone Calls and had observed the most resultant return fire, and had conducted the most low flying trench reconnaissance sorties.[125]

The German aim of overwhelming the Arras bastion and striking towards the coast was defeated by the British Third Army, and the main objective then switched to the south against Amiens.[126] The British Fifth Army, overwhelmed and driven back towards Amiens, was relieved by the Fourth Army on 28 March.[127] The Fourth Army comprised III (British) Corps and the Australian Corps. In this extremely critical situation, the last enemy assault made against Amiens was halted two days later by the Australian Corps, which had been moved south to the Somme valley to become the flank of the Fourth Army beside the French. Following an unsuccessful attack against Arras by the German 17th Army, enemy advances made during the *Great Battle of France* had almost reached their limits by the end of March.

Good weather on the first day of April permitted 3 Squadron to fly 53 hours, and successfully engage nine enemy batteries and photograph the whole Corps Front. Late in the morning, Lieutenants Francis and Hainsworth (A4397) were engaged on a destructive shoot, and having ranged the shoot and observing the fire for effect, the crew was attacked out of the sun by a DFW two-seater. Francis was able to out-manoeuvre the enemy machine and force his opponent west of Ypres. Most of the contest could now be witnessed from the Australians' aerodrome at Abeele, and the Australian airmen were able to send the enemy two-seater down to crash near Poperinghe.[128] This 3 Squadron victory on 1 April coincided with an important event in the development of air power. On this day, the Royal Flying Corps and the Royal Naval Air Service were merged into a third totally independent force, the Royal Air Force or RAF, the change occurring when the aeroplane was having a decisive effect on the outcome of the battles on the ground. However, this change in British air power organisation was not to have any change on Allied policy in the air: the Allies remained, as always, on the offensive.

By early April, the German offensive had ground itself to a standstill, and the enemy plan to divide the French and British armies had failed. On 3 April, 3 Squadron received orders to leave the Armentières-Ypres Front to move south to the Somme, as the Australian Corps had already moved south to meet the German advance on Amiens. The Somme valley formed a natural line of defence for Paris, and has always been one of the great military barriers of northern France. By 7 April, 3 Squadron was established 110km south of Abeele near Amiens. Poulainville aerodrome was in an open field to the west of the Amiens-Vignacourt railway and beside the Australian Corps Headquarters at Bertangles, and the Squadron now came under the 15th Wing of the 5th Brigade RAF. The Australian Corps front now extended from the French front south of Villers Bretonneux, to the Ancre at Albert in the north,[129] or basically the line immediately east of Amiens. Although it was desirable for a Corps squadron to be based near its Corps headquarters, it was not always practical. Often the military situation was insufficiently clear to warrant moving aerodromes, and so advanced landing grounds (ALG) were selected near the Corps headquarters to support daily operations by the squadron. Wherever possible, aeroplanes were flown back at night from the ALG to the main aerodrome.[130]

At the commencement of its operations on the Somme, 3 Squadron's tasks differed to those flown on its previous northern Front. No pre-programmed destructive shoots were conducted, the emphasis instead on responding more offensively by Zone Calls for fire on active artillery positions. Both 'A' and 'B' Flights maintained artillery patrols on the line from dawn to dusk, while 'C' Flight maintained a counter-attack patrol. This offensive spirit was further encouraged by more bomb dropping and trench strafing than had been carried out previously.[131]

The Squadron recommenced work with the Australian Corps on 11 April. That afternoon, three R.E.8s were learning the new line, flying at 4000 feet over Hénencourt when they were attacked by six Albatros scouts. Although the enemy fighters were driven off, one R.E.8 flown by Lieutenants Rees and Paul (A3541) was damaged with both crew wounded, but Rees was able to land within the British lines. The following day, 'A' Flight experienced two serious accidents, when two aircraft crashed separately taking-off at Poulainville aerodrome: that morning, Lieutenants Best and Lewis (B3435) were both killed when departing for a photographic sortie, and early in the afternoon Lieutenants Fryberg and Suess (A4758) were injured when departing for an artillery patrol.

Also that day, unbeknown to the Australians, Captain Manfred von Richthofen's unit, *JG1* or *"Richthofen's Circus"*, had moved to Cappy, opposite 3 Squadron, to obtain air superiority over the strong British opposition that was preventing reconnaissance flights west of the River Ancre.[132] JG1 was now the best-known German fighter group, and its brightly-painted scouts would appear wherever the fighting was the thickest, or wherever the reconnaissance machines were busiest. This move was intended to enable German reconnaissance as far as 20km

behind the lines. In accord with the German policy of deploying aircraft to where they were needed on the front, the *Circus* moved regularly, operating from tents, and would concentrate unexpectedly to achieve local air superiority, then move on to another assignment.

On the evening of 19 April, Lieutenants Herbert and Sewell (A3665) were bombing enemy troops along the Somme on the Bray-Corbie road west of Etinehem, when they were attacked by six Pfalz scouts "with bright red noses". By making a skilful running fight back towards Hamel, the R.E.8 crew forced one of the enemy scouts down out of control.[133] They were then able to attract the attention of a flight of British S.E.5 scouts, which forced the enemy aircraft to withdraw.

Two days later, on the overcast spring morning of 21 April, one of the war's best known aerial engagements occurred. That morning, von Richthofen took off from Cappy with five members of *Jasta 11* and headed towards the Somme, where they were joined by *Jasta 5* on the hunt for RAF reconnaissance machines. Soon they spotted a pair of 3 Squadron R.E.8s near Hamel, flown by 'B' Flight crews Lieutenants Garrett and Barrow (A3661) and Lieutenants Simpson and Banks (B6576). The Australian airmen were taking photographs of the German troop and supply concentrations near Hamel from a height of 7000 feet, and saw a flight of triplanes approaching.[134] It was the leading German ace with his *Circus*.

Von Richthofen led down another aircraft to attack the two R.E.8s. Simpson and Banks fought them off, followed by Garrett and Barrow, who had success in seeing one triplane hit, which began to go down.[135] This was the other German pilot, *Leutnant* Hans Weiss, who recorded: "I had attacked a flight of enemy reconnaissance aircraft and a bullet cut a rudder cable. I had to return home because I was unable to turn properly."[136]

The approach of the *Circus* also triggered British anti-aircraft to fire white "archie" and alert the enemy's presence, and this attracted a formation from 209 Squadron RAF, with their Sopwith Camels engaging the German fighters. The arrival of the friendly scouts enabled the Australians to continue their reconnaissance, although an hour later, at 11.40am, when returning across the line in the same vicinity, Simpson and Banks were unsuccessfully attacked again by a large formation of Albatros scouts, and were able to return safely with their photographs. Meanwhile, von Richthofen's combat with a Camel had taken him low over several machine gun emplacements manned by Australian troops. Shortly afterwards, von Richthofen fell over the Somme valley, hit by a single bullet, his triplane making a rough landing by the Bray-Corbie road, on the Allies side of the lines. Who fired the fatal bullet which killed the leading German ace has been open to conjecture ever since; the debate has continually been waged whether he was hit in aerial combat with a Sopwith Camel or by Australian fire from the ground.

A salvage crew from 3 Squadron, under Lieutenant Warneford, collected the wreckage of the triplane. Von Richthofen's body was removed from his wrecked machine, and placed in a 3 Squadron hangar. Although the victory over Richthofen was credited to Captain Brown of 209 Squadron RAF, more recent research has led to the fact the fatal bullet must have been fired from below. The Baron's death had been caused by a single bullet, which entered his chest on the right side and emerged about five centimetres higher from the opposite side.[137] An Australian machine-gunner, Sergeant Cedric Popkin shot at the triplane and observed at once that his fire had taken effect. C E W Bean, the official Australian historian, recorded:

> Certainly no one who watched from the ground the last minute of that exciting chase with only two 'planes in the picture will ever believe that Richthofen was killed by a shot from a third aeroplane which no one from Vaux onwards observed.[138]

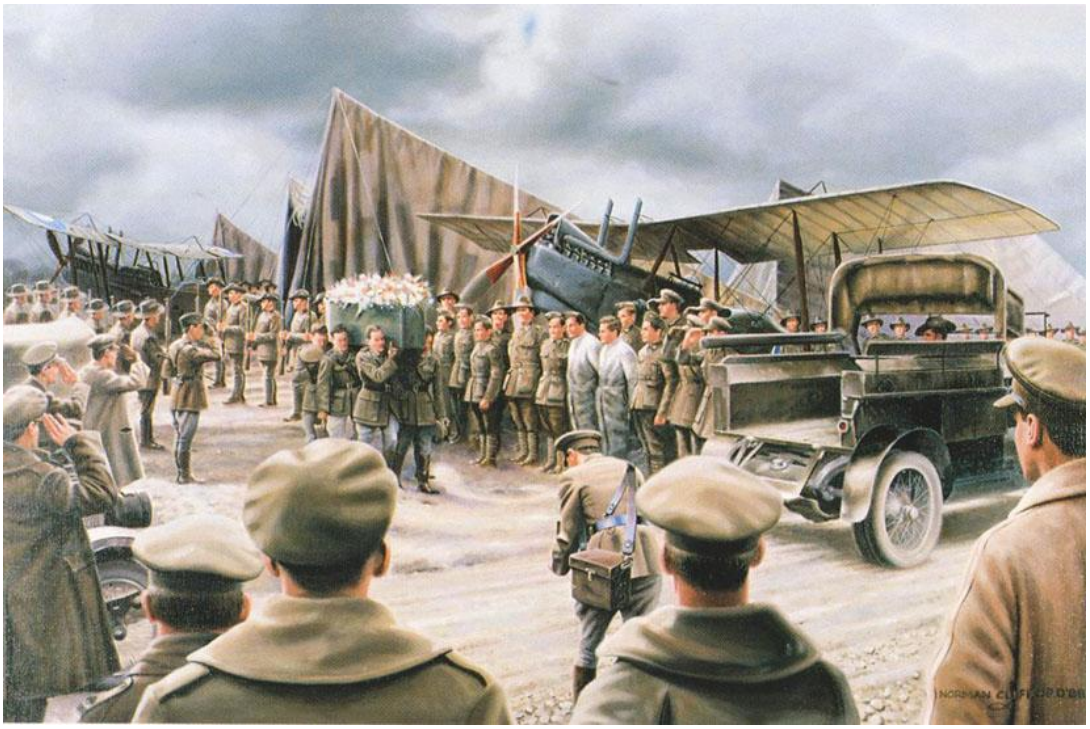
3 Squadron's Commanding Officer, Major Blake, was "personally satisfied that Richthofen was brought down by fire from the ground."[139] It has been surprising that for so long, there has been uncertainty about the RAF's claim for Richthofen. Recent researchers have concluded that the evidence and probabilities logically indicate that the honour belongs to Sergeant Popkin, and have explained the ensuing confusion:

> The secrecy, aggravated by the files being closed for 50 years, created a vacuum which was filled by rumour, speculation and pure fiction phrased for thrills. Each one fed upon the other until the truth was lost.[140]

The "Red Baron" was buried the following day at Bertangles with full military honours, with 3 Squadron leading the guard of honour and providing the firing party. The cross for his grave had been fashioned by 3 Squadron from an R.E.8 propeller. After the war, his body was moved to a larger cemetery at Fricourt, and in 1925 was again moved to its final resting place in the Invaliden Cemetery in Berlin.

VON RICHTHOFEN'S FUNERAL 22 APRIL 1918

German ace Captain Manfred von Richthofen, who had downed 80 Allied aircraft, was shot down by Australian groundfire on Sunday 21 April 1918. His famous red Fokker triplane crahed in front of Australian lines and his body was brought back to 3 Squadron's hangars.



This painting by Australia's leading aviation artist Norman Clifford shows the full military funeral at 3SQN's Poulainville aerodrome – the coffin was carried by six captains drawn from British squadrons in the area, and the firing party (below) and leader were Australian.[141]

AWM B02040 *[colourised by Benjamin Thomas]*

He was buried on 22 APR at Bertangles with full military honours and a 3 Squadron firing party.

Von Richthofen, before his success as a scout pilot, had been an observer in lumbering German two-seater reconnaissance machines, and had recorded:

> In the Western theatre the eye of the reconnaissance flier sees things which are very different from those to which the cavalryman is accustomed. Villages and towns, railways and roads seem lifeless and dead. As the eye is an imperfect object for observation one replaces it by the photographic apparatus. Everything that seems important to one must be photographed. If one comes home and if the plates have gone wrong, the whole flight has been for nothing. Frequently a photographic plate is more valuable than the shooting down of a squadron.[142]

On the same day that the Red Baron fell, 3 Squadron was engaged in another successful aerial combat. 'A' Flight Commander Captain Jones with Lieutenant Taylor (A3817) fought two Pfalz scouts over Albert for five minutes and destroyed one, seeing it hit the ground and burst into flames.[143] The following day, 22 April, 'B' Flight Commander Captain Duigan and Lieutenant Paterson (B2271) first detected the big railway-gun firing near Harbonnières, which was subsequently captured during the offensive of 8 August and was brought to Australia for display at the Australian War Memorial.

Over the three day period of 21-23 April, counter-battery work increased, and the R.E.8s located 50 batteries by flashes, sending calls for fire upon 29, with nine of these put out of action.[144] Most of this new enemy activity was noticed in the flats south of the Somme, indicating an impending assault, which occurred at Villers Bretonneux in the early morning of 24 April. After a heavy bombardment, and assisted by tanks, the Germans succeeded in capturing the town and the adjacent high ground, which now gave the enemy direct observation down the valley of the Somme, almost as far as Amiens. This was a tactical locality of vital importance to the defence of Amiens, which, in German hands, constituted a direct threat to the junction between the French and British Armies.[145]

In support of the Australian Corps, 3 Squadron crews flew contact patrols as low as 100 feet above the ground in the bad weather and poor visibility to report this situation.[146] Lieutenants Herbert and Sewell (A3665) took off at dawn on a counter-attack patrol and soon became enveloped in a very dense fog near Corbie.[147] Herbert attempted to climb out of the thick fog bank, but realised his machine was losing height, and suddenly seeing the ground beneath him, levelled out and flew along at about 15 feet above the ground, avoiding trees and houses. Now identifying the enemy lines, the observer was able to fire off several bursts at the German trenches from point-blank range. The Australians were also able to attack an enemy battery, and then zoomed up from their precarious position. However, with this manoeuvre, Herbert brushed a tree, causing some branches to jam his right aileron. In the face of imminent disaster, Lieutenant Sewell climbed out of his cockpit to sit on the upper wing to compensate for the jammed aileron.[148] This enabled Herbert to continue climbing, emerging from the fog into sunlight at 1800 feet. Having now been airborne for over an hour, and lost in fog for half that time, the pilot was able to work the control-column and eventually free the aileron. The observer climbed back into the aeroplane, as they now headed west to clear the fog. After a further 15 minutes, they were able to see the ground and after identifying some features, landed near Trouville, beyond Rouen. After repairing bullet-holes in their machine and a badly punctured tyre, the two airmen returned to their aerodrome that evening.

The enemy assault on Villers Bretonneux was then brilliantly counter-attacked by the Australian Corps on the night of 25 April, and Amiens was saved. It was an excellent example of a responsive counter-attack, assembled from all available forces and delivered before the enemy could establish his position with an organised defence.[149] The attack on Villers Bretonneux was the last attempt made by the Germans to break through the defences of Amiens. Indeed the enemy made no more attacks on the Somme, and all became quiet on that part of the Western Front. The German drive on the Marne would also peter out in mid-July near Rheims, where the enemy was halted and driven back by Allied Supreme Commander General Foch's counter-offensive.

Therefore by the end of April 1918, the opposing lines on the Somme were rapidly consolidating again into strong trench-systems, with the Germans giving up any hope of taking Amiens. Renewal of trench warfare on the Somme demanded 3 Squadron's attention in the location of all enemy batteries for regular counter-battery bombardment, constant photography of the front as the Australian Corps continually eroded German defences and straightened the line, and the close reconnaissance of trenches and lines of communication – all the old trench duty made familiar at Messines in the previous winter. This return to trench warfare marked the German defeat on the Somme at the end of April, and the failure of Ludendorff's main plan.

R.E.8 AIRCRAFT of 69 (AUSTRALIAN) SQUADRON / 3 SQUADRON AFC 1917 –1919

R.E.8 aircraft were allocated to 69 (Australian) SQN from the last week in JUN 1917, on advice the Squadron would proceed overseas that AUG. The R.E.8, nicknamed "Harry Tate", was at this stage the standard Corps reconnaissance aircraft for army cooperation on the Western Front. In AUG 1917, 2A/M Sloane wrote "*we have about 20 brand new R.E.8s*" – 69SQN flew to St Omer France on 9 SEP 1917, then to Savy on 10 SEP.[150] Codes shown in red are unconfirmed by documentation or photography, but by analysis should be accurate.

" 8/17* " is an assessment of the initial allotment to 69SQN over Jun-Aug 1917.

" 20/2/19* " indicates aircraft probably still on strength when R.E.8s handed over to 1AD at St Omer.

RFC/RAF Serial	Date On Sqn	Sqn Code[151]	Date Off Sqn	Details
A3541	26/3/18	H	14/4/18	Shot down 11/4/18 (Rees/Paul) by Albatros scouts near Hénencourt; to 2ASD and SOC 15/5/18.
A3654	8/17 *	–	11/9/17	Spare aircraft, to 6 Sqn RFC; SOC 21/4/18.
A3661	8/17 *	12, M	29/6/18	Damaged 27/6/18 (Kerr wounded/Brook killed) by Pfalz scout (Vzfw A Haussmann of *Jasta 13*) nr Corbie, and forced landed nr Pont Noyelles; to 2ASD and SOC 5/7/18.
A3662	21/8/17	9, J	17/7/18	Marked "presented by Mr H Teesdale-Smith of Adelaide", damaged landing 20/6/18 (Potts); to 2ASD.
A3663	21/8/17	–	12/9/17	Named "Australia No 13 NSW No 12 The Macintyre Kayuga Estate"; to 9 Sqn RFC, SOC 9/10/17.
A3665	16/7/17	15, P	26/6/18	Damaged 24/4/18 (Herbert/Sewell), forced landed nr Trouville; repaired, damaged landing 27/5/18 (Dimsey) at Flesselles; to 2ASD and SOC 5/7/18.
A3667	16/7/17	14	21/10/17	Named "City of Adelaide", crashed landing (Tregilles/Moir) and collided with A3756 on ground; wrecked and SOC, engine 2AD.
A3673	9/17	17	18/10/17	Crashed landing (Herbert/Drummond) when hit hangar to 2AD and SOC 22/10/17.
A3674	24/10/17	–	24/10/17	Crashed on delivery (King) nr St Pol.
A3746	21/8/17	–	14/10/17	Named "South Australia"; to 4 Sqn RFC and shot down 7/11/17.
A3747	7/17 *	–	8/17	Named "Australia No 20 NSW No 18 The McCaughey Battleplane", not taken to France; to 21 Sqn RFC, SOC 1918.
A3754	21/8/17	5	24/9/17	Named "Australia No 21 NSW No 19 Narrandera-Jerilderie Battleplane",[152] crashed landing 13/9/17 (Paterson/Paull) at Savy; to 2AD for repair and SOC 2AD 26/9/17.
A3755	8/17 *	7, G	2/12/17	Crashed (Storrer/Scott both killed) on take-off at Bailleul and wrecked; to 2ASD and SOC 6/12/17.
A3756	8/17 *	8	21/10/17	Wrecked on ground when hit by A3667 and SOC, engine to 2AD.
A3772	27/7/17	-	27/7/17	Crashed on delivery near Coventry (Trout killed).
A3815	8/17 *	1, A	22/3/18	Stalled and wrecked (Kindred); to 1ASD and SOC 26/3/18.
A3816	8/17 *	2, B	17/12/17	Damaged in crash 17/10/17 (Sandy/Neilson) nr Petit Servins; shot down 17/12/17 (Sandy/Hughes both killed) by Albatros D.Vas, and crashed near St Pol; to 2ASD and SOC 28/12/17.

A3816/B shot down near St Pol by Albatros D.Va scouts on 17/12/17

R.E.8 AIRCRAFT of 69 (AUSTRALIAN) SQUADRON / 3 SQUADRON AFC 1917 –1919

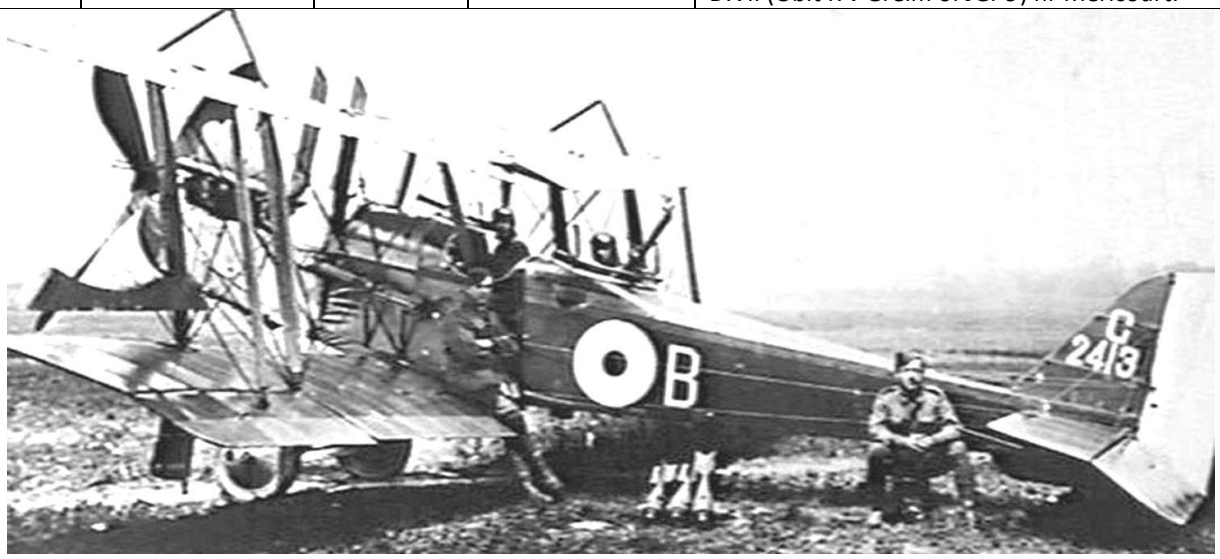
RFC/RAF Serial	Date On Sqn	Sqn Code	Date Off Sqn	Details
A3817	8/17 *	3, C	15/6/18	Damaged landing 23/9/17 (Petchler/Hodgson) at Savy; damaged (E Jones/Hainsworth) 16/5/18 by Dr.Is at Morlancourt; crashed 15/6/18 (S Jones/Loram both killed) at Flesselles.
A3818	8/17 *	4	19/9/17	Crashed 16/9/17, to 2AD for repair but SOC 2AD 21/9/17.
A3821	8/17*	18, S	18/12/17	Crashed landing (MacGillycuddy), to 2ASD SOC 23/12/17.
A3497	6/12/17	D	19/7/18	WFS war worn (record of 440 hours service flying), to 2 ASD; to Australian Govt 21/11/18, displayed in Melbourne 6/20, and destroyed by fire Austn War Museum at Melbourne 1925.[153]
A4404	22/10/17	O	6/5/18	Shot down (Ralfe/Buckland killed) by Fokker Dr.I (Ltn von Rautter of *Jasta 4*) nr Morlancourt Ridge.

R.E.8 C2309/O "The Ranby" shot down on contact patrol 8/8/18 by Fokker D.VII *AWM P00355.028*

A4439	8/17 *	12, M, H	25/3/18	Damaged in crash 18/11/17 (Simpson/Millington) and repaired, crashed 25/3/18 (Sell killed/Millington) nr Cassell; to 1ASD and SOC 29/3/18.
A4758	28/8/17	6, F	14/4/18	Crashed 12/4/18 (Fryberg/Suess) on take-off at Poulainville; to 1ASD and SOC 20/4/18.
A4759	28/8/17	13, N	13/1/18	Crashed takeoff (Roberts/Fossett); to 1ASD and SOC 19/1/18.
B2253	19/1/18	R	3/4/18	Ex-21 Sqn RFC; named "Khan of Kalat No 2", crashed 1/4/18 (Smith/Withers) nr Lake Dickebusch; to 1ASD and SOC 8/4/18.
B2259	22/12/17	H	26/1/18	"Gold Coast 3", shot down by AA 26/1/18 (Donahay/Blair both killed) nr Dranoutre; wreckage to 1ASD and SOC 31/1/18.
B2271	4/12/17	G	18/9/18	Damaged 9/5/18 (Duigan/Patterson) nr Cachy by Fokker Dr.I (Ltn F Hemer of *Jasta 6*), repaired by 19/5/18; damaged in hangar by storm 17/9/18 at Proyart; to 2ASD wrecked.
B2275	19/2/18	Q	21/6/18	Forced landed 19/6/18 (Armstrong/Mart) at Flesselles; to 2ASD and SOC 24/6/18.
B3420	11/9/17	10, K	1/7/18	Dam landing 24/11/17 (Roberts/Barkell); to 2ASD time expired.
B3421	8/17 *	–	21/8/17	Crashed (Shapira/Sloane both killed) at Biggin Hill, Kent.
B3430	7/9/17	14	23/10/17	Crash landed 17/10/17 (Tregilles/Moir) at Auchel, to 2AD for repair; SOC at 2AD 28/10/17.
B3431	29/12/17	B	3/2/18	Crashed 3/2/18 (Chapple) at Bailleul; to 1ASD and SOC 7/2/18.
B3435	24/9/17	5, E	12/4/18	Crashed 12/4/18 (Best/Lewis both killed) taking-off at Poulainville, wrecked and SOC.
B4048	13/9/18	S	20/2/19 *	Sqn strength still 15/11/18, damaged weather exposure 5/1/19.
B5018	17/9/18	4, D	5/12/17	"Colony Mauritius No 11", damaged forced ldg 4/12/17 (Francis/ Hainsworth), to 1AD; to 52 Sqn RFC and crashed 22/3/18 SOC.
B5081	22/10/17	8, H	19/12/17	Crash landed 19/12/17 (Wrigley/Biddle) and wrecked; to 2ASD and SOC 21/12/17.

R.E.8 AIRCRAFT of 69 (AUSTRALIAN) SQUADRON / 3 SQUADRON AFC 1917 –1919

RFC/RAF Serial	Date On Sqn	Sqn Code	Date Off Sqn	Details
B5097	29/10/17	15, Q	14/11/17	Damaged ldg 12/11/17 (Malpage/Hodgson), to 2AD and rebuilt; to 13 Sqn RFC.
B5105 [154]	27/10/18	L	20/2/19 *	Ex-12 Sqn RFC; still on 3 Sqn strength 27/11/18.
B5890	20/10/18	N	15/3/18	Crashed landing at Bailleul (Penhall/Rowntree); to 1ASD and SOC 21/3/18. [155]
B6491	17/3/18	N	2/4/18	Damaged takeoff 1/4/18, to 1ASD and SOC 5/4/18.
B6511	22/12/17	S	15/1/18	Damaged ldg 10/1/18, returned 1AD; to 52 Sqn RFC.
B6576	28/1/18	L	27/10/18	"Zanzibar No 7", damaged 2/6/18 (Simpson/Gamble) when shot down by AA at Hamel; to 2ASD SOC.
B7917	5/10/18	C	20/2/19 *	Forced ldg Savecourt 22/11/18 (Frayne/Howard), on strength still 27/11/18, dam ldg 22/1/19 (Frayne).
B8876	5/2/18	B	21/5/18	Damaged 20/5/18 (E Jones wounded/Taylor killed) by Fokker Dr.Is; to 2ASD and SOC 2/6/18.
C2242 [156]	6/18	S	6/6/18	Crashed Flesselles 6/6/18 (Baillieu), to AD for repair.
	25/6/18	S	10/8/18	Forced landed 8/8/18 Villers Bretonneux (Lock/ Barrett); to 2ASD and SOC.
C2270	2/4/18	N	12/8/18	Crashed 12/8/18 (Dimsey/Davis) in forced landing at Sailly-le-Sec, nr Hamel, wrecked.
C2275	2/4/18	R	11/8/18	Named "Pyancus", damaged by groundfire 18/6/18 (Duff wounded); damaged 10/8/18 (Smith/Witcomb) by groundfire near Vauvillers; repair 2ASD as F6277.
C2309	8/5/18 [157]	O	8/8/18	Named "The Ranby", shot down 8/8/18 (Bice/ Chapman both killed) on contact patrol by Fokker D.VII (Oblt R v Greim of *JGr 9*) nr Mericourt.



C2413/B on 3SQN MAY-SEP 1918 *AWM P00499.001*

C2326	10/11/18	H	20/2/19 *	"Digger", still Sqn strength 1/19; 59 Sqn RAF 24/2/19.
C2333	16/4/18	F	22/8/18	"Burma No 2", dam ldg Vignacourt 21/8/18, to 2ASD.
C2413	20/5/18	B	4/9/18	Damaged 30/8/18 by AA (Roberts/Bell), to 2ASD.
C2490	11/8/18	R	16/8/18	Dam by groundfire 15/8/18, to 2ASD for repair.
	9/9/18	R	26/9/18	Shot down by groundfire 18/9/18 (Dimsey unhurt/ Machin killed) near Villeret; to 2ASD and SOC.
C2535	16/6/18	C	4/10/18	Damaged 27/6/18 (McKenna/Heslop) by Albatros scouts and forced landed nr Corbie; damaged 26/7/18 (McKenna/ Heslop) when hit by AA and forced landed nr Bonnay; crashed 4/10/18 at aerodrome (Richards), to 2ASD and SOC 12/11/18.
C2599	12/8/18	S	12/9/18	Damaged by groundfire 23/8/18 (Lock/Mart) nr Herleville, dam ldg 9/9/18 (Armstrong); to 2ASD SOC.
C2610	31/7/18	P	20/2/19 *	Damaged by groundfire 11/8/18 (Lock/Barrett) near Morcourt; dam by groundfire 29/9/18 (Deamer/ Fullerton) nr Bony; still on 3 Sqn strength 27/11/18.

R.E.8 AIRCRAFT of 69 (AUSTRALIAN) SQUADRON / 3 SQUADRON AFC 1917 –1919

RFC/RAF Serial	Date On Sqn	Sqn Code	Date Off Sqn	Details
C2696	17/9/18	Q	16/10/18	"Punjab No 48", dam 14/10/18; to 2ASD and SOC 7/11/18.
C2728	14/8/18	N	20/2/19 *	Damaged by groundfire 11/9/18 (Baillieu/Sewell both wounded) forced land Bouvincourt; weather dam 5/1/19.
C2748	13/9/18	O	20/2/19 *	"Sylvia", still on strength 27/11/18, weather dam 5/1/19.
C2795	29/9/18	–	17/10/18	"Baroda No 12", crashed ldg 17/10/18 at Premont;[158] to 2ASD and SOC 7/11/18.
C2800	13/9/18	J	30/9/18	Dam by Pfalzs 26/9/18 (Deans/Prince); 2ASD SOC 3/10/18.
C2904	7/10/18	M	25/11/18	Damaged by groundfire 23/10/18 (Wrigley/ Scrivenor) nr Maroilles; crashed into by R.E.8 of 9 Sqn RAF at Flaumont (Wrigley) 24/11/18, to 2ASD SOC 10/12/18.
C2913	24/10/18	J	17/11/18	Forced landed 14/11/18 (Fossett/Hanson); to 2ASD SOC.
C2920	23/10/18	R	20/11/18	Forced land 18/11/18 Amiens road (Dimsey); to 2ASD SOC.
C2978	11/18	M	20/2/19 *	"The Ranby"(2), still on Sqn strength 12/18, retn'd to RAF.
C4581	16/4/18	H	18/9/18	Damaged 5/7/18 (Chase/Blundell) take-off at Flesselles, repaired; wrecked by storm 17/9/18 Proyart; 2ASD SOC.
C4586	25/3/18	A	1/9/18	Shot down 29/8/18 (Gould-Taylor/Thomson) by groundfire; to 2ASD and SOC 2/9/18.
C5043	16/11/17	Q	17/2/18	Shot down 17/2/18 (Streeter/Tarrant both killed) by friendly artillery fire at Clark's Dump; wrecked and SOC.
C5079	13/1/18	S	9/5/18	Crashed 8/5/18 (Penhall/Witcomb) Bertangles; 2ASD SOC.
D4689	9/5/18	S, P	31/7/18	Dam landing 30/7/18 (Dimsey), to 2ASD and SOC 8/8/18.
D4814	9/8/18	O	14/9/18	Damaged by groundfire 8/9/18 (Pengilley/Witcomb) at Estree; to 2AD and rebuilt as H6843.
D4821	16/4/18	E	1/10/18	Dam 31/8/18 (Kilburn/Moore) by Fokker scouts and forced landed in Austn lines, repaired; to 2ASD time expired.
D4842	19/7/18	D	20/2/19 *	Still on 3 Sqn strength 19/11/18, returned to RAF.
D4853	1/7/18	K	11/8/18	Dam by AA 10/8/18 (Chase/Jeffers); 2AD rebuilt as F6254.
D6730	28/6/18	M	5/10/18	T/o crash 5/10/18 (Pickering/Shelley) Bouvincourt; 2ASD.
D6817	18/9/18	H	23/11/18	Named "Malaya No 22", damaged forced landed 4/11/18 (McGilvery/McDougall) at Malincourt; 2ASD SOC 1/12/18.
E119	16/7/18	J	9/9/18	Forced landed 6/9/18 (Deans); to 2ASD and SOC 11/9/18.
E120	13/8/18	K	19/9/18	Missing nr St Quentin Canal (Peel/Jeffers both killed).
E123	21/6/18	Q	20/2/19 *	Forced landed 9/8/18 (Armstrong/Mart) nr Allonville; still on 3 Sqn strength 27/11/18; returned to RAF.
E224	31/8/18	A	3/10/18	Dam 16/9/18 (Roberts/Sturgeon) by groundfire nr Bellicourt; missing 3/10/18 (Gould-Taylor/Thomson both killed), believed hit by shell nr Estrées.
E225	22/8/18	F	20/2/19 *	Named "Orissa States No 2", damaged by Fokker scout 6/9/18 (Sheehan/Bell); still on 3 Sqn strength 27/11/18.
E234	9/8/18	S	14/8/18	Shot down Morcourt 11/8/18 (Lock/Barrett), to 2AD and rebuilt as F6280.

F6016/K "Marjorie" 19 FEB 1919 at Tarcienne, just as 3SQN's aircraft were about to be handed back to 1AD *AWM E04320*

R.E.8 AIRCRAFT of 69 (AUSTRALIAN) SQUADRON / 3 SQUADRON AFC 1917 –1919				
RFC/RAF Serial	**Date On Sqn**	**Sqn Code**	**Date Off Sqn**	**Details**
E248	4/9/18	B	20/2/19 *	Still on 3 Sqn strength 27/11/18, returned to RAF.
E1108	8/10/18	A	20/2/19 *	Still on 3 Sqn strength 27/11/18, returned to RAF.
F5881	4/9/18	-	6/9/18	Collided landing (Armstrong) with 9 Sqn R.E.8, to 2ASD and SOC 11/9/18.
F5899	15/8/18	R	8/9/18	Shot down 2/9/18 by groundfire (Dimsey/Machin), to 2AD and rebuilt as H6845.
F6016	24/9/18	K	20/2/19	Named "Marjorie", photo on 3 Sqn strength 19/2/19.
F6254	1/10/18	E	15/11/18	Forced land 9/11/18 (Roberts), 2ASD SOC 26/11/18.
H7023	21/11/18	R	20/2/19 *	Forced land 15/2/19 Bellicourt (Howard), to RAF.
H7040	16/11/18	E	20/2/19 *	Still on 3 Sqn strength 19/11/18, returned to RAF.
H7042	21/11/18	J	20/2/19	Photo still on 3 Sqn strength 19/2/19.
H7265	17/9/18	G	20/2/19 *	Ex-F6360; still on 3 Sqn strength 21/11/18 and returned to RAF; to 25 Sqn RAF crashed 18/3/19.

Notes:

1. F5381 is listed in the 3SQN Record Book (Army Form W.3343), but this was apparently F5881.
2. F6360 was documented in the 3SQN Record Book on six separate flights by 'B' Flight crews during SEP 1918, but the number had been allocated in error to an Aircraft Depot rebuilt machine, and was soon corrected with a new serial, H7265.

The R.E.8 was the most prolific Corps aeroplane, entering service in 1916 and serving through to the Armistice. By NOV 1918, there were fifteen R.E.8 squadrons at the front.[159] One R.E.8, F3556, is on display at the Imperial War Museum at Duxford, England; another is A4719 in Brussels, Belgium (displayed as '326'); and the RAAF Museum at Point Cook has a flying replica A4397/D. The real A4397 was destroyed in a fire at the then *Australian War Museum* in Melbourne in 1925, together with a Bristol Fighter and a third unidentified (possible German) aircraft. The instructional R.E.8 RAF4a engine held at Oakey's Museum of Army Aviation and Flying is unrelated to A4397.[160]

Squadron Markings. As stated in Part I, Individual squadron markings were introduced for the Corps reconnaissance squadrons in APR 1916, and by the end of that year squadron markings were widely adopted on the Western Front. Corps squadrons were allocated unit markings on arrival in France: 69SQN R.E.8s were identified by a solid white disc on the fuselage just behind the national roundel,[161] allotted on 19 SEP 1917. In MAR 1918, these unit markings were forbidden for all but the fighter squadrons on the Western Front. [162] However, individual aircraft in 69SQN were identified by large white numbers after arrival in France, the initial 18 aircraft had been allocated *numbers* 1 to 18. This was soon changed, apparently in NOV 1917 (as 69SQN moved from 1 Brigade RFC to 2 Brigade), to *letter codes*:

'A' Flight aeroplanes were marked A to F,
'B' Flight G to M (excluding I), and
'C' Flight N to S. [163]

At the changeover from numbers to letters, the "A" Flt aircraft were probably changed in sequential order from 1 to 6, to A to F. Similarly "B" Flt 7–12 to G–M, and "C" Flt 13–18 to N–S.[164] This letter code system then remained until the Squadron ceased operations in FEB 1919.

Aircraft Repair. Aeroplanes were repaired on the Squadron if they could be effected within 36 hours, otherwise the machine would be passed to the Aircraft Depot (AD).[165] Two Aircraft Depots, 1AD at St Omer and 2AD at Candas, had been formed in December 1915 to supply and repair the RFC in France. Aircraft Depots were supplemented in 1917 by Aeroplane Supply Depots (ASD). 1ASD was based at Marquise, moving later St Omer, and 2ASD initially at Berck-sur-Mer, later Fienvillers (near Candas). 1AD and 1ASD supported the two northern British armies; 2AD and 2ASD supported the two southern armies. Both 2AD and 2ASD had to be evacuated in late March 1918 with the German offensive on the Somme – 2AD pulling back to Rang du Fliers, and 2 ASD to St André-aux-Bois.

All 3SQN AFC aircraft were flown from Tarcienne, Belgium, to 1AD at St Omer, on 20 FEB 1919 for return to the RAF.

Part III covers MAY 1918 to the great Allied offensive in AUGUST 1918
with a list and images of 3 SQN R.E.8 presentation aircraft

Getting the RAAF Numbers right in WW2 Part 5;

Fighters: the final War Years, to the outbreak of Peace. By Gordon R Birkett @2018

As written in Part 2, from March 1943, all Spitfire and P-40 Fighter Squadrons were now at the new establishment number of 24 aircraft (16 IE and 8 IR) which would remain until war's end, with an added Wirraway. During the same month, a standard Squadron marking system was also introduced.

Spitfire

It was noted by March 1943 advice from the United Kingdom that production of the Spitfire Mk Vc, (still being built in small numbers by Westland, up to September 1943 when production of that mark would ceased), would be delivered with clipped wings and bomb racks.

Those produced on the production line subsequently became the "F MK IX" mark of the Spitfire...with Mk V fuselages and Boosted Merlin 61/63 or 63A engine. Boosted engines (four prop airscrews cropped to 9 feet 5 inches with engines producing 18 lb more boost, and exhaust manifolds would be multi-ejector exhausts instead of the then triple ejectors) which would provide an additional 45-50 mph speed at low level. Those for India (CBI) and Australia would still be of the Mk Vc (T) HF standard.

From arrival in the North Western Area in January 1943, the three Spitfire Squadrons by the end of April 1943 had incurred smaller losses than expected. The Commander Allied Air Forces, General Kenny USAAF, requested that an additional Spitfire Squadron be raised from accumulated Wastage Reserve inventory and immediately dispatched to SWPac.

The total receipts of Mk Vc Ts by that time was 178 aircraft, with a further 24 aircraft being off-loaded in Port.

A combined total of 80 were on establishment with the three fighter squadrons and OTU; against a establishment total of 110. (*Establishment requirement of 96 spitfire aircraft for four squadrons and a further 14 for the OTU*)

A further 13 were on route to those units, another 8 were undergoing erection and a further 18 were being repaired or modified. This amounted to 119 Spitfire MK Vc T aircraft available. Some 35 of those delivered had been lost by Enemy action, with another 24 lost in accidents.

Spitfire wastage deliveries, 15 aircraft arriving each month from the United Kingdom for the three established Spitfire Squadrons of the Churchill Wing at Darwin, was only sufficient for three squadrons. Therefore a request to increase the monthly wastage figure to 25 aircraft was made.

By requesting a monthly increase in allocation shipment of a further 7 aircraft, to add the RAAF monthly wastage requirement to the 15 aircraft commencing from December 1943, they could equip a further fourth squadron.[166].

The new fourth squadron, No 79 (F) Squadron RAAF, was formed on the 26th April 1943, from the reserve inventory for operations in SWPAC.

By September 1943, some 40 Mk VIII Spitfires, fitted with Merlin 66 engines, were being prepared and dispatched on Convoy OS.58 to Australia to form two further RAF Manned Squadrons in theatre, Nos 548 and 549 Squadrons RAF.

Squadron and Flight Commanders would be transferred from Nos 130 and 234 Squadrons RAF, based in the UK, with the percentage of the remaining eighteen pilots, being a 50/50% RAF/RAAF manned.

With some 142 Spitfire MK VcTs on strength and only 111 Spitfire Mk VIIIs on hand, the Spitfire Mk VIIIs would therefore equip three RAF squadrons first and the other three RAAF squadrons at a later date when more aircraft had been delivered.

These 111 airframes, however, would fulfil their Unit Equipment (Establishment); provide six months maintenance spares and twelve months' Depot requirements for two squadrons, and to replace those MK VcTs in the third RAF Squadron in theatre, No 54 Squadron RAF.

These three Squadrons would form No 1 "Churchill" Fighter Wing while the three RAAF squadrons, No's 79, 452 and 457, would form No 80 Fighter Wing.

This meant that 452 Squadron RAAF, who had already started to receive the newer Mark VIII in February 1944, would relinquish its first eight MK VIIIs to 54 Squadron RAF in the interim.

A seventh Spitfire Squadron, No 85 Squadron RAAF was the first Spitfire unit to be posted to after successfully completing their conversion at 8OTU based at Parkes NSW. From there, after building up experience and hours, they would be posted to Nos 1 or 80 Wing.

Since this squadron was equipped with Spitfire MK VcTs, it was discussed that perhaps they could improve the training standard to fly the Mk VIII, on arrival to their new squadron.

An additional request for 6 MK VIIIs was therefore made to the Air Board in June 1945 to equip a flight within 85 Squadron RAAF. However, the current establishment number of operational Spitfire Mk VIIIs could not meet the requirement as 8OTU was also short of the standard Mk VIII type.

This, and the fact that at that time, No 85 Squadron was earmarked to re-equip with P-51D/K Mustangs in the near future, resulted in that requirement not being filled.

Later in July 1945, despite the general policy of the RAAF was not to mix up Mark types or even sub-types within squadron establishment where possible, the supply of wastage aircraft and those returning to service (a high number due to shipping issues necessitating the replacement of engine coolant pipes in most) to established squadrons necessitated a major rethink on how to fulfil wastage in accordance with available sub types.[167]

No 79 and No 452 Squadrons RAAF needed replacements for their MK VIII losses, but the number of MK VIIIs available did not meet the number requirement.

The intention was realised that thereafter, was that 80 Wing would be reformed at a wing level with different sub-types in all three squadrons: two squadrons (No 79 and 457Sqns) on Mk VIII HF (A58-601 to 7**) and the remaining one (No 452Sqn) with normal Mk VIIIs (Series A58-3** to 5**).

A58-303 top was a Mk VIII and A58-601 above was a Mk VIII HF

P-40N's; more are flowing fast from Curtiss Wright from 1943.

As stated in Part 3, the flow of P-40Ns were starting in earnest, that by August 1943, there had been some one hundred and twenty- three P-40Ns shipped with a further twenty on the sea, completing the MAC (Air) allocations made up to July 1943. These were made up of 23 P-40N-1s under Indent 2012A, Case 126 (Aus# 9) and 80 P-40N-1s under Case 200 (Aus#'s 12, 14 and 15). They were all MAC (Air) sequentially numbered at the factory from A29-1000 (42-104634) to A29-1122 (42-105376). These P-40N-1 to 40s, and A-25A Shrikes later were the only aircraft that had their RAAF Serials applied at the factory during production in the United States before being shipped under Lend Lease.
A letter from Assistant Chief Inspector, Aircraft , British Air Commission to the Director War Supplies Procurement, Washington March 1944, stated that RAF Serials were correlated with USAAF Serials, thus arrangements could and should be made to have RAAF Numbers applied and correlated with USAAF Serials for Lend Lease Procedures.

Aircraft formally accepted by the USAAF and USN prior to RAAF Ownership; Catalinas (PBY-5's West coast), B-24s (Oklahoma) and Mariners (Ex Banana AS Florida) had theirs applied when handed over ex depots or on delivery. They would be re-serialled out of sequence in Australia within the blocks A29-400 to A29-522. It should be noted, that due to shipping availability, these allocations were shipped at different times and arrived out of sequence to three, and later four, points of assembly, to Sydney, Melbourne, Brisbane and later Townsville.

A further 162 P-40Ns under Case 200 (Aus#'s 18, 20, 24 and 27) would arrive thereafter. In all for 1943, some 320 P-40M/Ns under Amendment No 4 to Requisition 322 were allocated and sent to Australia. Another 223 P-40Ns were to be bid for under MAC (Air) for 1944.

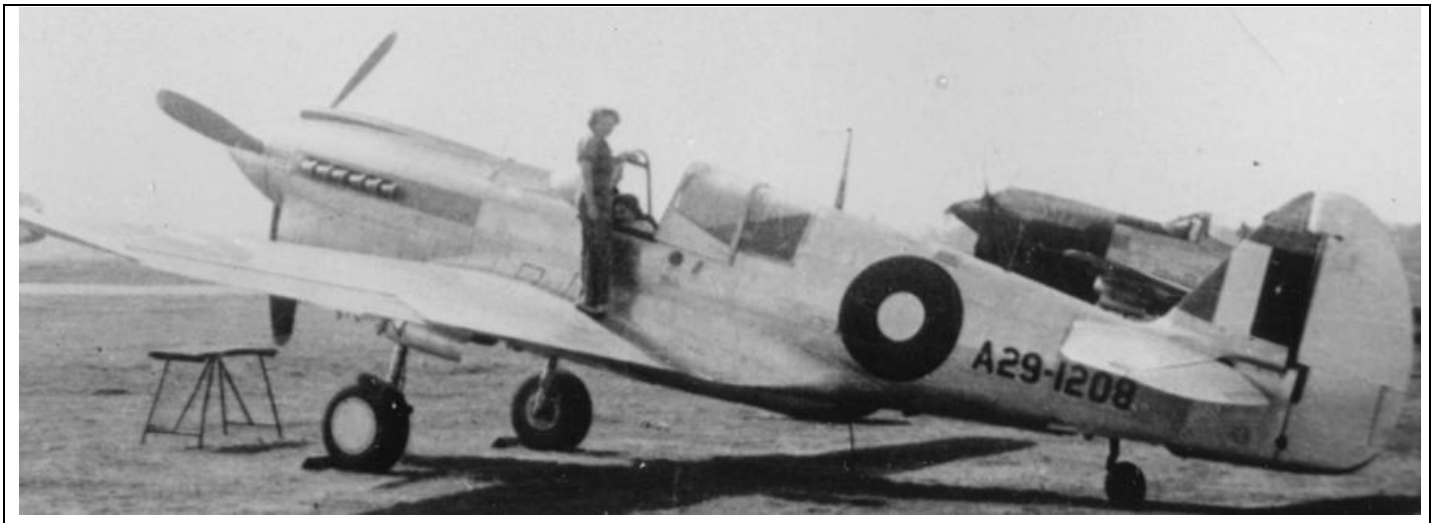
A further allotment of 30 P-40N-5s (Case 200 (Aus#18) *A29-1123 to A29-1151*) was moving from the Factory to the shipping point, as part of the first allocation of a further 162 P-40N-5's.

We're not painting them anymore! Or did they?

Not RAAF, but P-40N-40 FY 44-47773 which precedes on the Curtiss Wright production line before RAAF Mac Air A29-1424, later A29-1100 ex 44-47774, part of Indent 2270 Case 500 RFDA-322A, Diversion 1158-A, allocation Aus 62#1. The point made is that by then, the USAAF had dispensed with camouflaging its aircraft then in production. Below is P-40N-40 44-47860, pictured as delivered 30th October 1944, ex factory, without ever being camouflage.

The question is asked, were Foreign Lend Lease Contract aircraft dispensed with too? We do have a picture of A29-142(Last number covered, but identified as a final P-40N-35 build.) that shows they were supplied just prior this USAAF aircraft in Olive Drab/Neutral Grey ex Factory. This aircraft was produced between A29-1177, ex Mac (Air) A29-1503 P-40N-40 ex44-47853 but before A29-1128 Ex Mac (Air) A29-1504, P-40N-40 ex 44-47877.*

However, most if not all, were delivered in camouflage to the RAAF, such as the RAAF's A29-1124 Ex Mac (Air) A29-1489, ex P-40N-40 44-47839 which falls within the pictorial non-painted serial range of both USAAF P-40N-40s mentioned before.



Inconclusive, *but a doubtful few, as others such as A29-1208 Ex Mac (Air) A29-1448, ex P-40N-40 44-47798 was delivered in natural metal as substitutes for contracted ones replaced at factory?, or was it stripped by the RSU there as exampled by earlier models having been previously stripped of paint?*

Those that did had a black anti-glare panel, not an olive drab factory applied such as A29-1208.However again; the cheat line is not conforming to the Factory applied lines per 44-47773 or 44-47860.

Current Australian Production: Boomerang

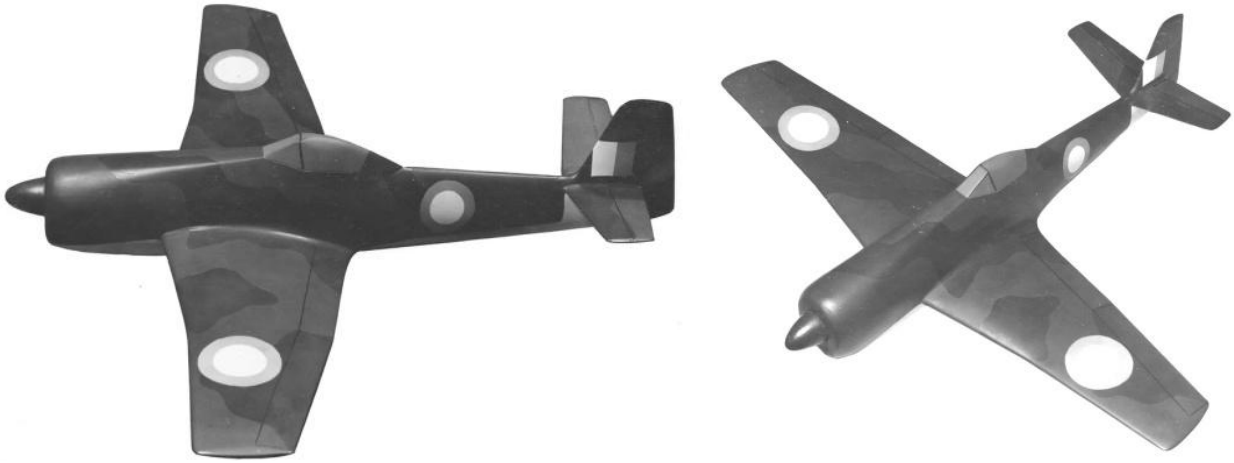
At this time, 18th December 1942, the number of Australian made Boomerang Interceptors ordered by the Department of Aircraft Production (Australia), was for only one hundred and five CA-12s. Soon, these were followed by another ninety-five CA13s, making a total of 200 aircraft.

Strangely, after Cabinet approval (Order C.S.3500) on the 5th October 1942, CAC started working on a Turbo exhaust driven double stage Super charger Boomerang, the CA-14 (Later serial A46-1001).

These were ordered under DAP Production Demandss#1024, covering the supply of the original 200 ordered to-date (CA-12's A46-1 to A46-105/CA-13's A46-106 to A46-200). A separate *DAP Production Demands, #1026, was for one Prototype Boomerang Interceptor fitted with a GR2600 1700hp Wright Cyclone engine.*

Discussion per the CA-15 Fighter, to be powered by a Pratt and Whitney R2800-43 Double Wasp Radial 18 cylinder 1850 BHP engine, was also started by CAC with the Department of Aircraft Production (Australia).

Approval for the production of two CA-15 Prototype aircraft was given on the 17th February 1943



The first 400 P-40N-1 aircraft were built as “light” P-40Ns.....weight reductions through the deletion of certain equipment, armour and hydraulic subsystems , reduced armament(four gun, though space and spare two 0.50cal were included in all crates, and effort to lighten oleo legs by fitting 27 inch diameter wheels instead of 30 inch wheels).

An issue concerning the toe-in of the landing gear necessitated shim modifications before being introduced into RAAF Service per advice from Curtiss Wright Technicians based in Australia.

On the basis of 35 aircraft per Squadron, inclusive of maintenance and wastage aircraft, this was enough to form or re-equip five fighter Squadrons by the end of 1943. The break down was still the 16 Immediate Establishment Use numbers with a further 8 aircraft in Immediate Reserve, with a further 11 aircraft held as wastage and maintenance reserves with Repair and Salvage Units.

P-40N Supplies look set to continue for this “all rounder” until war’s end.....so it was thought.

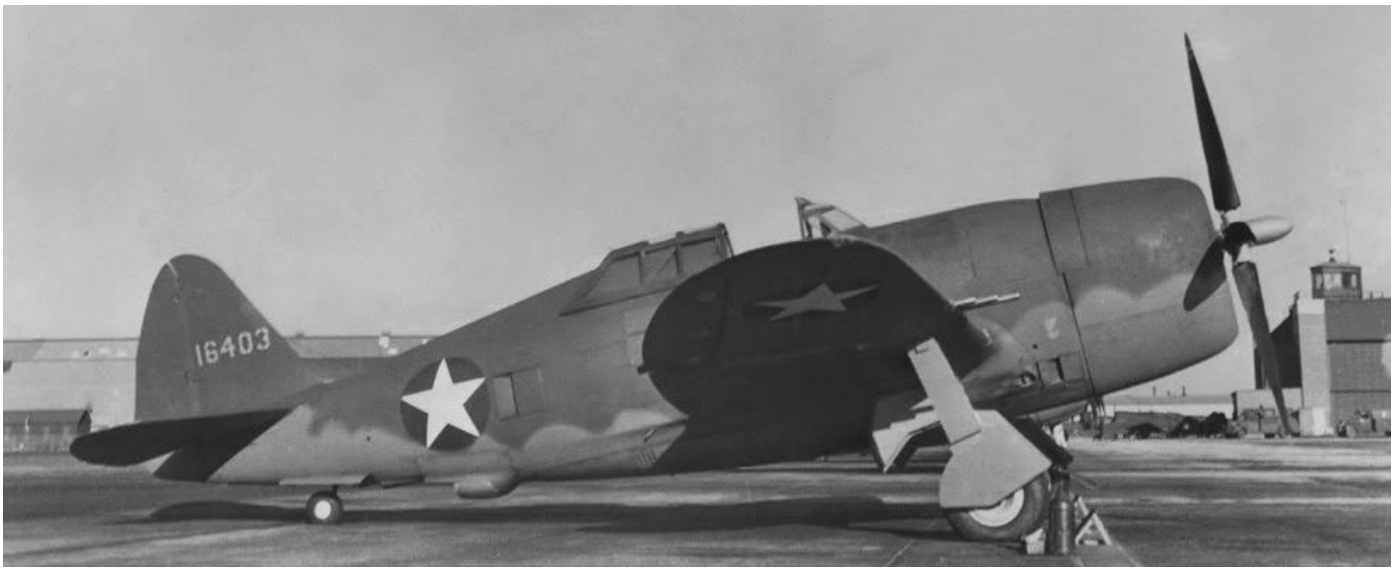
In the RAAF Squadron Establishment, No 120 Fighter Squadron NEIAF was counted like its fellow No18 Squadron NEIAF (B-25s), as a RAAF Kittyhawk Squadron, when it was formed late in 1943. It would deploy to “Potshot” (Oslo) in Western Australia initially, and then it would replace No 86 Squadron RAAF at Merauke in Dutch New Guinea in 1944.
Initial equipment was in the form of 12 ex RAAF P-40Ns that could be delivered a month ahead of actual contracted P-40Ns (Which later went to the RAAF and USAAF). A simular thing happened per their second batch of 10.

With the same Unit Establishment of twenty-four Aircraft, (16 Immediate Establishment Use numbers with a further 8 aircraft in Immediate Reserve), by April 1945, the aircraft on hand by both this Squadron and the Personnel and Equipment Pool (OTU with 9 aircraft assigned as well as 9 B-25s) was 41. That left only 8 NEIAF P-40N aircraft for attrition and wastage till June 1945.

Enter the "Snake"; aka North American P-51B Mustang [168]

Little do most people know that the first steps that led to the decision to manufacture the North American Mustang was taken just six days after the Raid on Darwin, 19th February 1942, by the then Australian Government. They were advised that the RAF were seeking delivery of the type, and offered to divert some, if available, before their production run was finished.

On the 8th December 1942, a Mission, under Mr D McVey, was sent overseas to investigate suitable fighters and bombers for the RAAF's future 1944 Seventy-two Squadron plan, with the former to equip some twelve Interceptor/fighter Squadrons. Performance reviews studied by the Mission following trials between the Republic P-47C, Supermarine Spitfire Mk IX and a Merlin powered North American Mustang Mk X, fitted now with a RR Merlin 65 Engine in place of an Allison V12, the recommendation was made in favour of the last[169].



P-47C 41-6403

A formal decision on obtaining a high altitude fighter for the RAAF was finally approved by the War Cabinet on the 15th April 1943, per War Cabinet Agendum No 177/1943, the North American Mustang (four gun P-51B).

(The UK contender for manufacturing was the Supermarine Spitfire Mark 8, which still was delivered in quantity to the RAAF from late 1943, though not produced here. Both were to be powered by the Merlin 61. The P-51B order was changed later for the six gun P-51D).

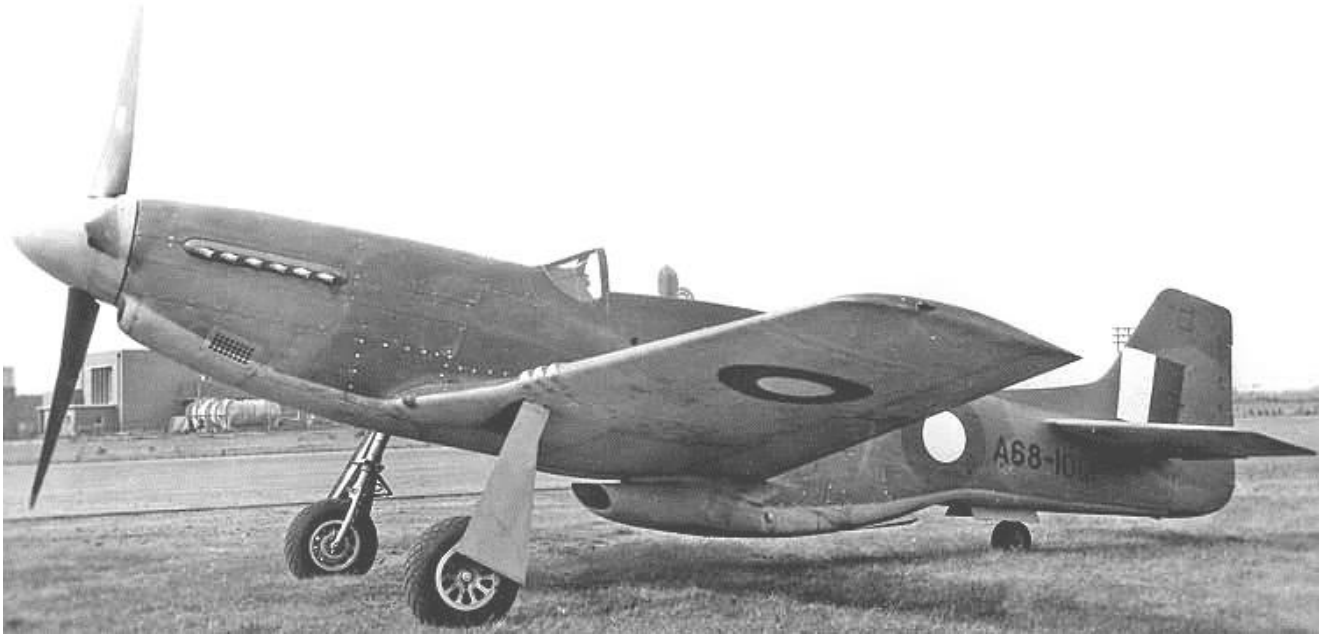
Views of the Commander in Chief, 5th Air Force (5thAAF), General Kenny, was that the Mustang, currently armed with only four 0.50 calibre guns was not comparable with the eight gun P-47D.

His May 1943 counter recommendation was for the production locally of the P-47D Thunderbolt aircraft, then re-equipping some squadrons of 5th Fighter Command, as it could go into local production at least six months earlier, and help the parts and maintenance requirements of existing P-47D equipped units of the 5th AAF.

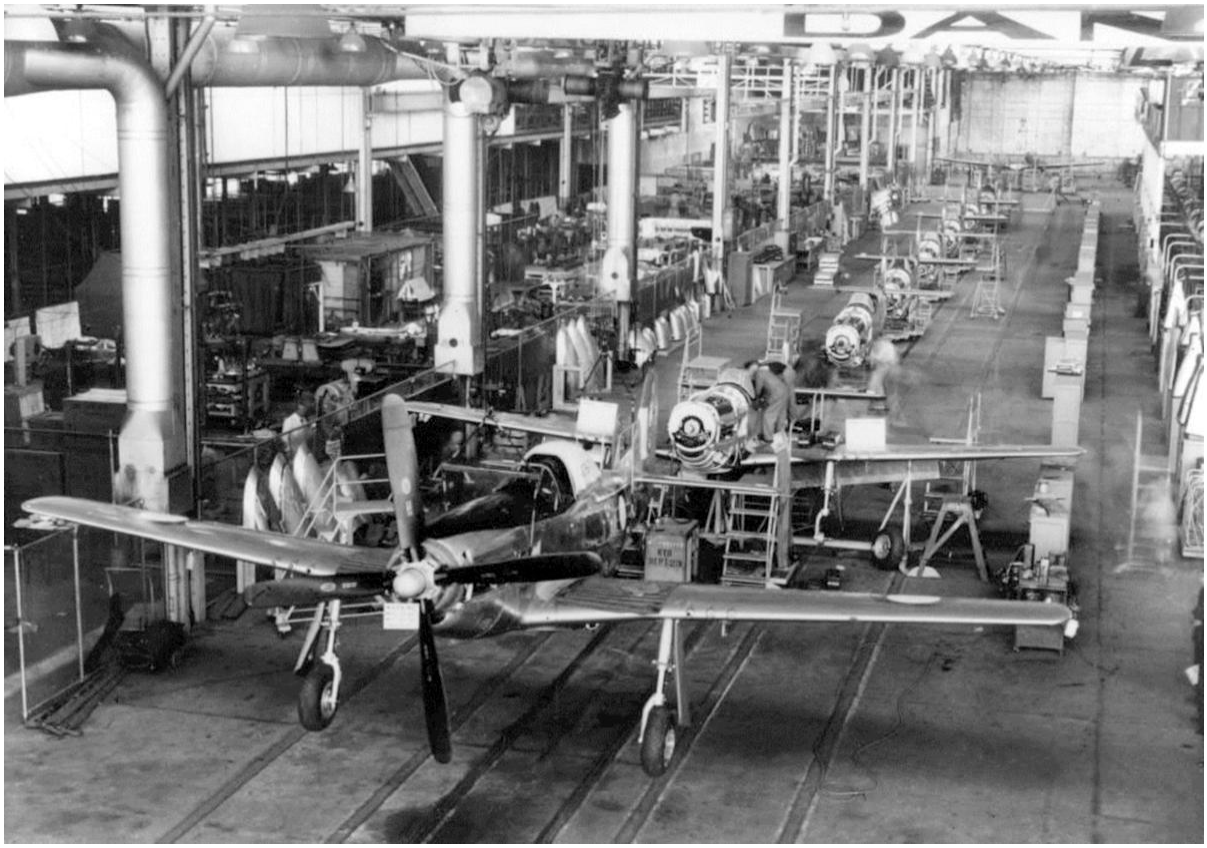
His view also reflected in that a Radial engine was easier to produce locally then an in line engine as such as the Rolls Royce Merlin 61, that was in his opinion, just leaving the experimental stage prior to series production.

In either case, both were deemed superior to any known Japanese fighter aircraft, thus MAC (Air) during July 1943, scheduled a single P-51D for delivery ex USA during September 1943 under Case 200 Requisition #40651, to act as a pattern aircraft for CAC on arrival, along with one hundred knockdown kits (Twenty spares) for local CA-17 production under Requisition 41662, that would supersede the CAC Boomerang production run from 1944.

Eventually the 40th produced P-51D-5NA, FY 44-13293, a Lend Lease Mustang IV, was shipped ex USA later in March 1944, later becoming A68-1001). A68-1001, it made its first flight in Australia on the 23rd April 1945.



A68-1001



Based on a 350 CA-17 aircraft program, with in addition, a further seventy-four aircraft spares, it was a large program.
This was further expanded for additional materials to manufacture another 340 aircraft plus a further 68 spares. Grand total of 690 aircraft and one hundred and 38 spare airframes.

Target assembly of CA-17s for 1944 would be February (10), March (15), building up from May (20). By January 1945, the monthly figure would rise to 35 per month through-out 1945.

However protracted contract negotiations, first with the USAAF for permission of an agreement to produce the type, more delayed processing again caused by both by the USAAF on its insistence that a recommendation for local production be forwarded by General Kenny in support of the Australian Government's decision to produce such type, and finally, licence agreement concerning post war protection with North American, regarding infringement of their design patents.

By 12th December 1943, the incomplete Contract was still going back and forth from North America and the USAAF (Based at Wright Field) mainly due to disagreements in regards to engineering fees and contingency fees for North American Aviation.

Finally, on the 22nd January 1944, USAAF Contract W33/038/AC389 *covering the CA-17 Project, was finally signed by the Office of the Under Secretary of War, and returned to the USAAF Contract Section at Wright Field Ohio, for action.*

*The CAC CA-17 Mustang production was on its way.....****so it was first thought.***

But ... an unexpected delay per a halt in the supply of materials authorised by the USAAF from the North American factory to manufacture locally the first three hundred and fifty aircraft in the early part of 1944, was experienced.

Delays were primarily caused by the change in model from the contracted P-51B to the P-51D, resulting in some thousands of design drawing changes and component changes, and largely in part, due to the success and need of the type in the European theatre as a long range escort fighter, replacing the P-47D.

A letter dated 5th August 1944 by the Chief of the International Branch of the USAAF, Wright Field, commanded by Brigadier General E M Powers, that supply was suspended in early 1944 pending a review, and sought comment from General Kenny of the 5th Air Force.

By the 25th August 1944, General Kenny recommended that due to the pending direct supply of P-51D/Ks from North American, Dallas Texas, that local production should be now limited to 350 aircraft build.

The recommendation was based on a War Department report that paraphrased as follows: *"The production of the P-51D aircraft in Australia has fallen one year behind the target schedule which had been approved by the Joint Aircraft Committee in June 1943.*

The assignment of 152 P-51D aircraft to Australia has been proposed by the Munitions Assignment Committee (Air) "

Snakes alive; they came by the dozens from the USA

By August 1944, attrition requirements to maintain the RAAF's eight P-40 Squadrons[170] were calculated and raised to 5 aircraft a month, which equalled to having 40 aircraft supplied monthly.

It was estimated that the requirements for January to June 1945 would be for some 240 aircraft, however, earlier that year; it was advised by the USAAF that the supply of P-40Ns would be discontinued before the year ends, thus a needed switch to another type had to be considered and ordered.

Arrangements, though a lengthy and protracted task, had already been made by Australia to manufacture its successor, the P-51D Mustang, by CAC, from 1944.

The Operational Training Unit would be the first to be re-equipped with the Mustang in 1945, followed by a single squadron on a monthly basis.

The Aircraft Establishment of the Operational Training Unit was 54 aircraft with a further 8 aircraft for reserves and maintenance, plus a 5% attrition rate for five months; a further 14 aircraft.

This brought the total to 76 Mustang aircraft.

The first batch of 51 P-51Ks from the North American Dallas Factory would be at their USA Port of Embarkation by the 10th February 1945, with a second batch of 9 by the 12th February 1945, all 60 of these having the USAAF Insignia applied already.

Mustang A68-558 (LB-S) which was received by 84 Sqn RAAF on the 4th July 1945, waits for landing of another 84 Sqn RAAF Mustang at Bohle Strip.

The third batch of 25, to be at the USA Port of Embarkation on the 25th February 1945, would have their RAAF Roundels already applied at the factory before leaving.

(*USAAF Serial Blocks 44-12472 to 12522/44-12543 to 12551/44-12603 to 12627. P-51K 44-12473 was held back until July 1945 as it was used for equipment fitting trials*).

First arrivals, in Australia, arrived from the United States of America on the 14th April 1945, beating the first flight of an Australian produced CA-17 by only two weeks.

The later third batch above would be the first to arrive and to be assembled in Australia. The first locally assemble CAC CA-17, A68-1, flew on the 29th April 1945.[171]

Mix of RAAF, NEIAF, USAAF Mustangs, with a few Russian and USAAF T-6 Harvard trainers parked at North American.

Assignments and deliveries for the second half of 1945 included a further 215 P-51Ds, making the total to be delivered by year's end some 500 P-51D/K on delivery or on order, aside from local production.

Having sorted out the supplies of Single Engine Fighters to the end of 1945, the RAAF's fighter force would be established around the following:

- 10 Squadrons of Mustangs (RAAF), each with 24 UE and one Wirraway
- 3 Squadrons of Spitfires (RAAF),each with 24 UE and one Wirraway

But not including actually under command of the RAAF:

- 3 Squadrons of Spitfires (RAF) each with 24 UE and one Wirraway, which will be maintained by the UK per a promised 108 Spitfire MkVIIIs supply for 12 months
- 1 Squadron of Mustangs (NEIAF) each with 24 UE and one Wirraway. No responsibility for supplying Mustangs from RAAF Lend Lease Contracts or CAC Built. *Forty-one Dutch contracted P-51D/Ks were on order to re-equip No 120 Squadron by October 1945. Twenty-nine for maintaining the Squadron per UE and a further twelve for the Personnel and Equipment Pool.*

With the dropping of two atomic bombs and the entry of Russia into the Pacific war earlier that month, Imperial Japan surrendered on the fifteenth of August 1945.

By the 19th August 1945, America would have had three more atomic bombs ready with six more in production.

Wholesale RAAF Lend Lease contract cancellations commenced from the 17th August 1945...for peace had broken out.

On the 20th August 1945, some 84 P-51Ks and 214 P-51Ds had been shipped to Australia, with a further 18 at the west coast to be processed and shipped, exclusive of a single pre-delivery loss in the USA.

The last accepted P-51D would be 45-11483 delivered ex West Coast USA on the 10th August 1945.

All remaining P-51Ds allotted from there on, were cancelled, whereas deliveries of locally built CAC CA-17 Mustangs had only reached 16 in total by the 7th August 1945.

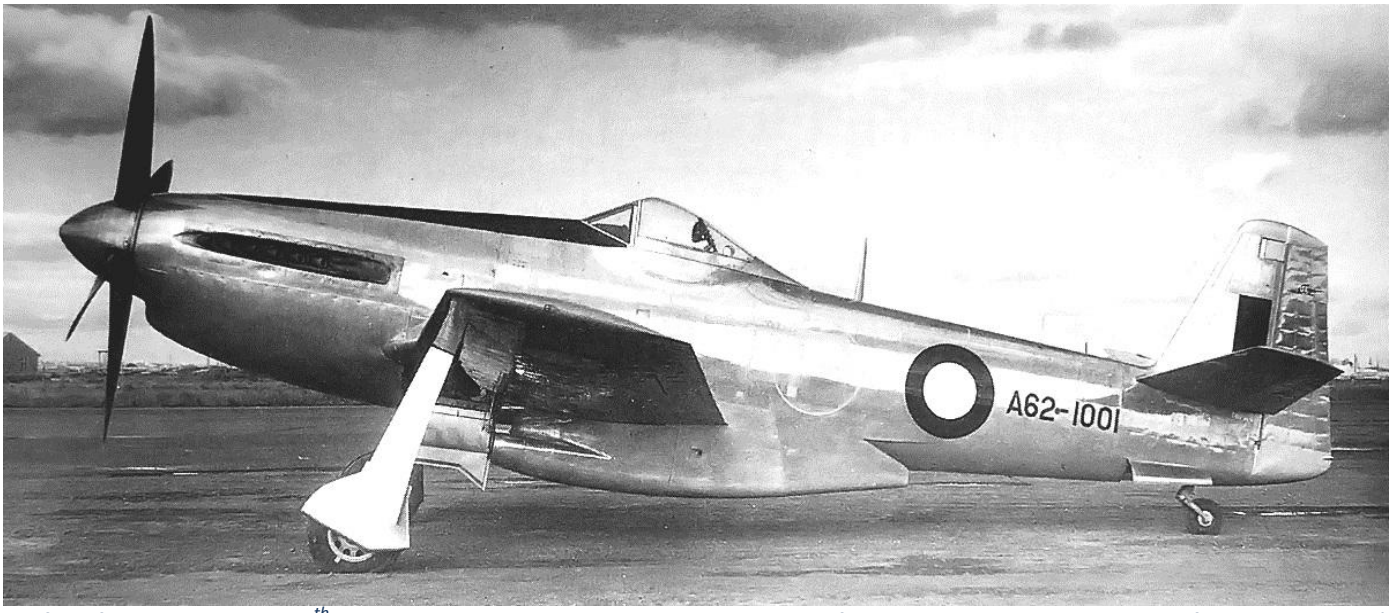
A total of 46 CA-17 Mustangs would be delivered by year's end, out of an anticipated total of one hundred that were earmarked to be produced by then.

Production of these would slow, with the last of 200 to be produced rolling off the CAC line and accepted into the RAAF on the 8th August 1951. *A68-200, **last of any new built NA/CAC Mustang worldwide ever built**, ended her days at Woomera on the 4th December 1953 at Woomera SA.*

The CA-15 Project, meanwhile, had been terminated by the War Cabinet Minute #3812 on the 27th September 1944.

However, given the need for a medium level replacement type to compliment the Mustang as a fighter bomber or even a possible post war type to replace the Mustang, more thought was undertaken.

It was therefore ***decided to reinstate per War Cabinet Minute#3925 the CAC-15 Project on the 7th December 1944,*** *with a version powered by the Rolls Royce Griffon Mk 61 Engine that would be similar powered the GAF Lincoln Bomber.*



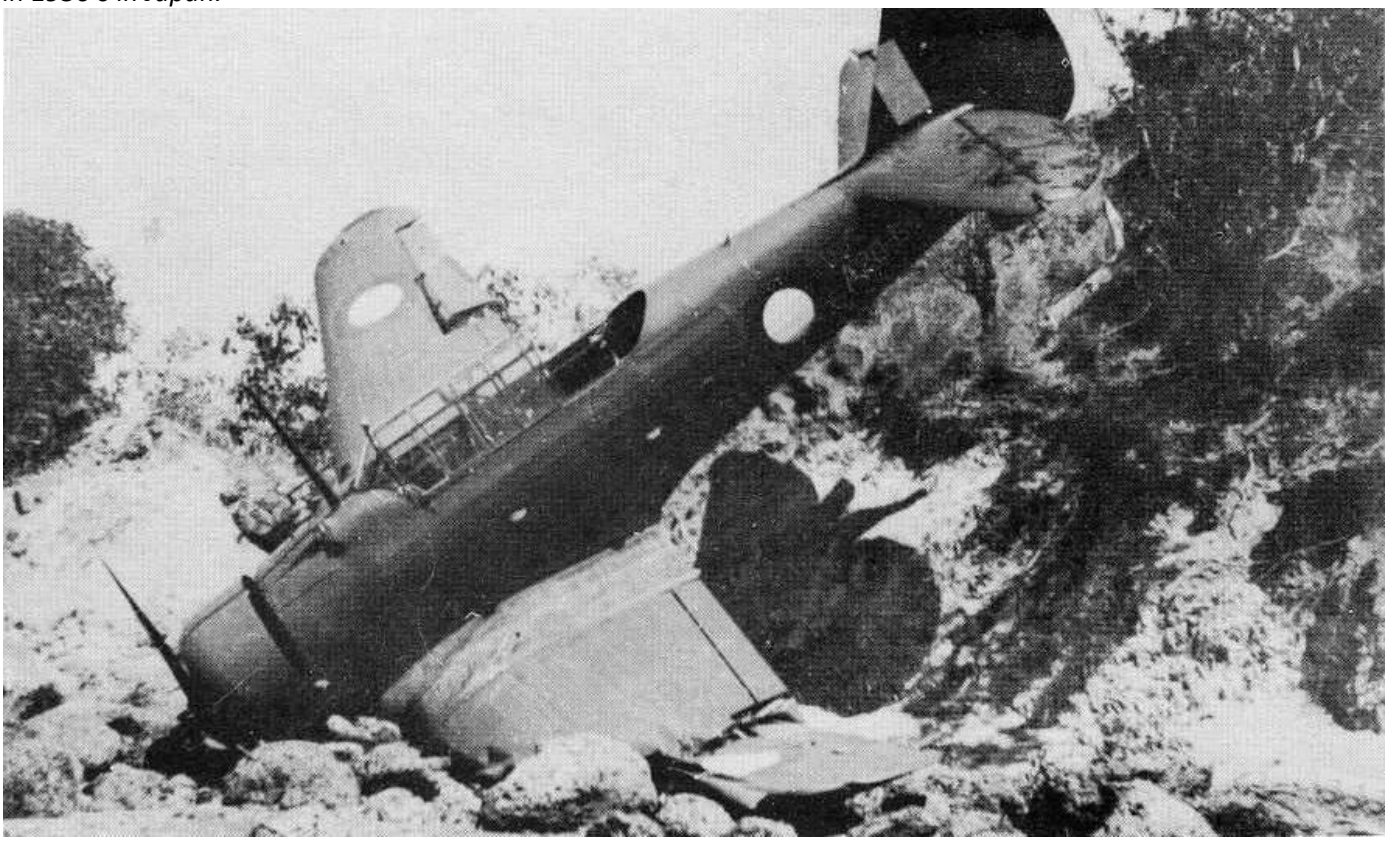
Its first flight was on the 4th March 1946 when CAC Test Pilot Jim Schofields took her up at 18.10hrs from Fisherman's Bend for the fifteen minute inaugural flight.

The quiet sentinel; Wirraways in Fighter Squadrons

Additionally, most in theatre RAAF/RAF and even NEIAF Fighter Squadrons (Spitfire and P-40) had a CAC Wirraway assigned to its establishment by the middle of 1944 to the end of the war.

*Examples of Wirraways being assigned to Fighter Squadrons at some time: 75 Sqn RAAF (**A20-624**), 76 Sqn RAAF (**A20-232**), 78 Sqn RAAF (**A20-625**), 79Sqn RAAF (**A20-469**, previously with 24 Sqn RAAF as GR-J, and later would eventually end up in the RANFAA), 80 Sqn RAAF (**A20-572** which also had served in 452Sqn RAAF), 86 Sqn RAAF (**A20-309**), 452 Sqn RAAF (**A20-631**), 457Sqn RAAF (**A20-642**), 54 Sqn RAF (**A20-275**), 548 Sqn RAF (**A20-292**), 549 Sqn RAF (**A20-294**) and 120 Sqn NEIAF (**A20-11**)*

The exception seems to be 77 Squadron RAAF, with no record of a Wirraway has been found to date, unless you rope in 1950's in Japan.



457 Sqn RAAF's Wirraway ,A20-642 in a spot of bother in NT.

86 Sqn RAAF's former Wirraway, A20-309, pictured post war.

To come: Part 6: Outbreak of Peace; the transition for Post War RAAF Squadron Structures

Sources: GRB Data and Photo Collections

NAA:

- A11093 452/A58 PART 1 RAAF Command Headquarters - Spitfire aircraft - A58 Access status: Open Location: Canberra 1943 - 1944 Item 3081565
- A1695 7/205/E PART 1 Acquisition of Aircraft for the RAAF - 1943 Case - 200 Pt.1 Access status: Open Location: Canberra 1943 - 1943 Item 139390
- A1695 7/205/EQ PART 2 Acquisition of Aircraft 1943 Case: 200 Access status: Open Location: Canberra 1943 - 1945 Item 139391
- A1695 6/205/EQ PART 2 Acquisition of aircraft 1943 Case 126 Part 2.Access status: Open Location: Canberra 1943 - 1943 Item 139381
- A1695 272/209/EQ Kittyhawk P40-N aircraft 1944 Allocation Indent 2270A.Access status: Open Location: Canberra 1944 - 1945 Item 139470
- A1695 80/206/EQ Equipment and Supply Matters Relating to the Proposed Manufacture of Mustang (P51) Aircraft in Australia. Access status: Open Location: Canberra 1943 - 1943 Item 139459
- A705 9/60/7 AMSE [Air Member of Supply & Equipment] - Appendix "A" equipment for CA 17 Aircraft - Mustang Access status: Open Location: Canberra 1943 - 1946 Item 164780
- A2676 1899 ATTACHMENT 1 War Cabinet Minute No 1899 (ii) - Manufacture of Mustang aircraft in USA Access status: Open Location: Canberra 1942 – 1942 Item 1566509
- A2680 12/1943 Aircraft production policy - production in Australia of 'Mustang' aircraft (refers to Advisory War Council Minute Nos 1108, 1181 and 1192)Access status: Open Location: Canberra 1942 - 1945 Item 31425999
- A705 9/49/5 Boomerang - A46 [CA12] - performance data 1942-1945 Access status: Open Location: Canberra circa1942 - circa1945 Item 164590
- A1196 1/502/26 PART 1 Fighter Aircraft CA 15 Part I Access status: Open Location: Canberra 1942 - 1943 Item 199210
- A1196 1/502/26 PART 2 Fighter Aircraft CA 15 Part 2 Access status: Open Location: Canberra 1943 - 1945 Item 199211
- A2676 3805 War Cabinet Minute No 3805 - Wackett CA 11 bomber and CA 15 fighter - Question of cessation of projects Access status: Open Location: Canberra 1944 - 1944 Item 1567115

Will the real CA-14 Boomerang step forward!!

Compiled and written by Gordon R Birkett @2018

"A Discussion paper: Allocation and historically accepted hindsight on CAC manufacture serial numbers post contracts"

Development of the CA-12 A46-1 into RAAF service

Recommendation of the Air Chief Marshall, Chief of the Air Staff dated 18th February 1942, stated that...

> *"Production of three Interceptor Fighters to enable service trials to be carried out as expeditiously as possible, so that in the event of Kittyhawks or other modern fighters not coming to hand, then a production order for Wirraway Interceptors can be put in hand immediately.."*

The *first Flight of CAC Boomerang (A46-1, CAC MSN 824) was on the 29th May 1942 with CAC Test Pilot Ken Frewin at the controls*.[172]

The CAC Construction Numbers for these series had flowed on after the last contracted CA-9 Wirraway was built (A20-622) with the CAC Construction number, # 823.

Pictured early May 1942 is A46-1 on the assembly line. Note Production Tail Tag of "A1", (Production Batch A and aircraft #1). Behind is the almost complete "A2" which would become A46-2. CAC

Not all went well during development test flights, on the 25th June 1942, after taking off at 1450hrs from CAC Fishermans Bend's Aerodrome, on a test flight with W J Manufacturing Company (Sydney) wooden blades (three) fitted to the Curtiss Electric Spinner hub.

After a full power climb to 20000 feet, the pilot experienced a sudden lurch and severe vibrations. The pilot noticed on checking his rear, that the starboard tail plane was loose and fluttering badly. Despite his pitot tube being broken, rendering his airspeed indicator inoperable, he reduced speed to almost a stall and made an emergency landing at the Werribee Satellite aerodrome.

The cause was traced to one of the wooden blades delaminating, causing the trailing edge to break off, striking the starboard tail plane, which resulted in the tail plane spar breaking (with a single hand, the unit could be raised or lowered by 6 inches!) .

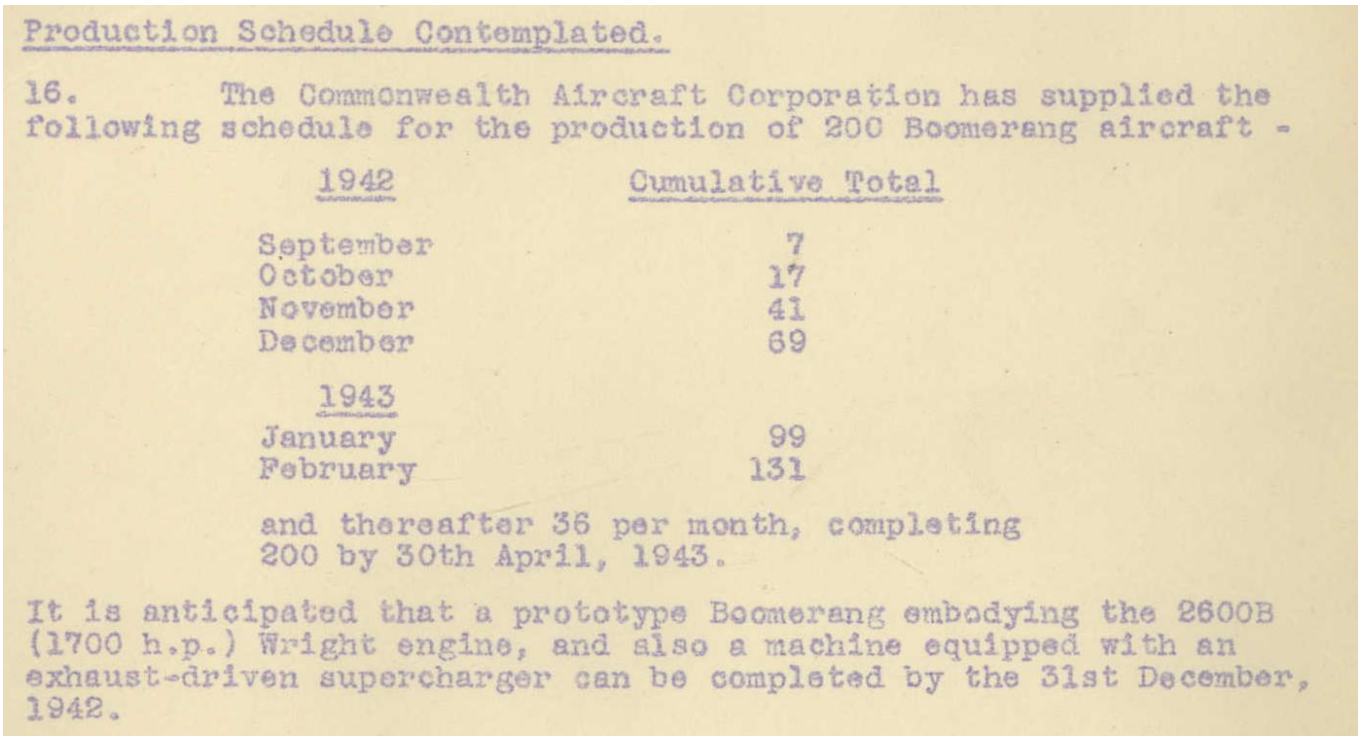
It remained attached by only its front attachment point and root fairing. The engine shrouds and fairings were also cracked due to the vibrations.

The aircraft was returned by road to CAC Fishermans Bend's Aerodrome the following day for inspection and repairs. It was repaired and then air tested before it was assigned to the RAAF for further testing. Total time on the airframe at the time of handover, was 24.40TThrs.

First delivered to the RAAF on the 15th July 1942, its service testing was cut short nearly a fortnight later on the 28th July 1942, with F/Lt Derek Randall Cuming (Serv#250553) at the controls. He experienced a Port Undercarriage collapse on landing at Laverton, causing damage to the port wing and the airscrew.[173] Total time on the airframe at the time of accident, was 39.40TThrs.

How many CA-12's do you want, and when?

The original contract was destined to been completed on the 14th August 1942 under the original schedule, with the last of the original contract CA-12s, A46-105, to be delivered by the 7th October 1942. Actual numbers were far less, IE: CA-12 Boomerang A46-9 was only delivered to the RAAF on the 29th October 1942, in spite of being previously scheduled for delivery by the 20th July 1942.



Production Schedule Contemplated.

16. The Commonwealth Aircraft Corporation has supplied the following schedule for the production of 200 Boomerang aircraft -

1942	Cumulative Total
September	7
October	17
November	41
December	69
1943	
January	99
February	131

and thereafter 36 per month, completing 200 by 30th April, 1943.

It is anticipated that a prototype Boomerang embodying the 2600B (1700 h.p.) Wright engine, and also a machine equipped with an exhaust-driven supercharger can be completed by the 31st December, 1942.

The main Boomerang issue in late 1942 was that production was nowhere near the intended schedule, for as of the 18th December 1942, only some twenty aircraft had been completed, with many more being tested, waiting for operational fits, parked ready for collection or waiting assembled, without engines and equipment fits.

The main cause was development, trials and the need to deliver the aircraft in the same standard, regardless of a hurried development period of only three months hence.

Testing of its performance against the P-40E Kittyhawk, P-400 Airacobra, and Buffalo showed the aircraft could and would outperform these aircraft at high altitude had it been fitted with a two stage exhaust driven supercharger.

CAC were keen to develop this idea and submitted a request to modify a Boomerang Interceptor with a available sourced example and seek approval for some one hundred and twenty-five such superchargers under Lend Lease to produce an improved high Altitude version of the CAC Boomerang.

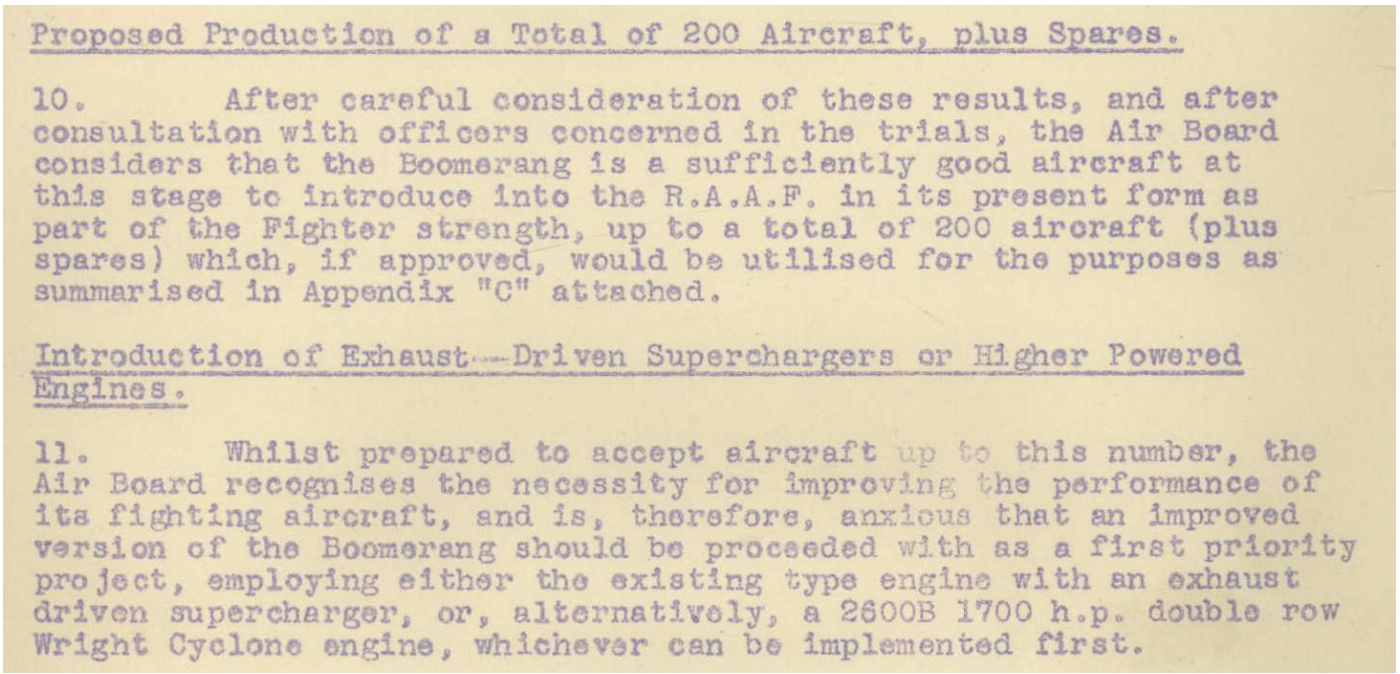
Following a submission to improve high altitude performance of the Boomerang, the Australian War Cabinet approval No 2403, (Order C.S.3500), was given on the 5th October 1942, for CAC to start working on single Boomerang, still powered by a Pratt and Whitney R1830 B/13 Twin Row Wasp, but modified and fitted with an turbo exhaust gas driven two stage Supercharger.

However, changing over model type on the CAC line, from the contracted one hundred and five CA-12 Boomerangs to the ninety-five CA13 Boomerang type, had resulted in a break of production for a period from early December 1942, to mid January 1943. [174]

Originally all two hundred (then contracted) were to be delivered by April 1943.

However this schedule was now changed with the last aircraft (A46-200) to be accepted by the RAAF no later than October 1943.

Somewhere either just before the CA-12/CA-13Type airframe changes in November 1942 or during that down time during December 1942/January 1943, one extra CA-12 Boomerang airframe which did not have a Construction Number plate affixed <u>at this time</u> by CAC, was set aside for what would become the Prototype CA-14.



Proposed Production of a Total of 200 Aircraft, plus Spares.

10. After careful consideration of these results, and after consultation with officers concerned in the trials, the Air Board considers that the Boomerang is a sufficiently good aircraft at this stage to introduce into the R.A.A.F. in its present form as part of the Fighter strength, up to a total of 200 aircraft (plus spares) which, if approved, would be utilised for the purposes as summarised in Appendix "C" attached.

Introduction of Exhaust-Driven Superchargers or Higher Powered Engines.

11. Whilst prepared to accept aircraft up to this number, the Air Board recognises the necessity for improving the performance of its fighting aircraft, and is, therefore, anxious that an improved version of the Boomerang should be proceeded with as a first priority project, employing either the existing type engine with an exhaust driven supercharger, or, alternatively, a 2600B 1700 h.p. double row Wright Cyclone engine, whichever can be implemented first.

So for me, I'm actually drawing a blank on the CAC MSN way back in January 1943 as to its actual number way back then for there <u>was no actual final number of proposed Boomerangs known at this time to reconcile against construction numbers.</u> [175]

Realising that the size and power of the R2600B 1700HP engine would not suit nor could be handled by the then designed Boomerang fuselage, they proceeded to design the fuselage around the engine. Enter the CA-15 Fighter/Interceptor, which will be told in a separate CAC Article later[176]

<u>The CA-14: Up and away,</u> but which aircraft is it, one of ours or yours?

In a CAC letter to the Secretary of DAP, dated the 7th January 1943, this CA-14 Prototype was ready for its first flight, after having its final weightings and Centre of Gravity (CG) determined.

It was fitted with an all metal Curtiss Propeller, pending the fitting of a 40 degree CAC Propeller that was undergoing an independent test.

Working on the General Electric B2 Exhaust Driven Supercharger ducting on A46-1001

If the tests were successful, the policy of extending the production of the Boomerang Interceptor past two hundred aircraft should be considered, particularly that Turbo Superchargers (Under DAP Demand #1025) would be made available following approval by the USA of such an approval.

In a letter dated the 2nd February 1943, Mr A.G. Brown of CAC advised DAP "Boomerang Turbo Supercharger installation completed as scheduled and flight Trials proceeding satisfactorily".

Pictured is the start of the first Flight of a CA-14 with *a General Electric B2 Exhaust Driven Supercharger, January 1943.*

An internal Memorandum within DAP, dated the 12th February 1943, which stated the concerns approval circumstances of the said CA-14 Prototype:

- A Boomerang with a exhaust driven supercharger and a Twin Row Engine (R1830)and
- The Production of a prototype equipped with an improved twin row Wasp engine(R2000)

Wing Commander Hocking stated that he understood CAC had found it impractical to comply strictly with the terms of approval (Dated 5th October 1942) and had consequently decided to build a separate prototype (known as the CA-14). .....this necessitated the construction of a prototype, as distinct from the original intention of equipping, with an exhaust driven supercharger of approved Boomerang, fitted with a standard R1830 twin row Wasp engine, as one of the order for 200 Boomerangs already approved at this time.

Wing Commander Hocking remarked after checking DAP approvals, that there was no specific approval given for the production of that CA-14 Prototype prior to it flying.

The point of the issue by discussed with Mr M C Langslow (Secretary of DAP), was therefore whether the cost of £15000 of the Project, per original 5th October 1942 Order C.S.3500, included a complete aircraft or only as additional work to be carried out on one of the two hundred Boomerangs on order under Demand #1024.

Subsequent enquiries on Wing Commander Hockings and Mr Delaney (CAC) and considerations by DAP resulted in a letter dated 5th April 1943, stating that the Project and the single CA-14 was fully authorised by the War Cabinet

Telegram Advice dated 16th April 1943 ex CAC to DAP: Excerpts...

> *....Turbo Boomerang successfully completed performance and handling tests and now handed over to the RAAF for service trials. Aircraft will be returned here in four weeks for incorporation of fan.*
>
> *Turbo Installation is very satisfactory and rated altitude 28000 feet achieved installation satisfies Mr Nelson, the General Electric (USA) Representative.....but performance in climb severely restrictive by available propellers..... Have examined Propeller requirements and recommend you endeavour to obtain two four bladed 11 foot Propellers (50 spline) similar as used on P-51B.*
>
> *Performance at full combat trim with guns, armour plate, and camouflage compared to standard Boomerang:*
>
> - *Top Speed Sea Level 269/275*
> - *Top Speed 15000 feet 311/305*
> - *Top Speed 28200 feet 348/276*
>
> *CA-14 therefore is 72 Mile per Hour faster than CA-12 at 28000 feet..... CA-14 has already flown to 35000 feet....*

The CA-14 Boomerang Prototype, A46-1001, was received later at the Special Duties and Performance Flight, 1AD Laverton ex Commonwealth Aircraft Company (CAC) on the 27th April 1943 for service standard testing.

Meanwhile, the Special Duties and Performance Flight was issued with their own CA-12 Boomerang, ***A46-46*** *for type and performance trials, on the 7th April 1943.*

Stated by letter to DAP, by the 23rd June 1943, the CA-14 Prototype had flown some thirty hours whilst under CAC Tests, and a further ten hours under the RAAF (SDPF).

Following an accident on the 27th May 1943, it was returned to CAC in June 1943 for rebuild and modifications, which would eventually lead to the CA-14A standard, before finally being returned to the RAAF in June 1944.

CAC placed a request for production to DAP in July 43, requested total of 150 CA-14As to be produced, following on from the last CA-13 to be built (A46-200 MSN 1023 which was eventually accepted by the RAAF on the 15th May 1944), based on the performance improvements already noted.

Enthusing as it was, a letter dated on the 14th August 1943 to Mr D C Bevan of the United States Lend Lease Mission to Australia from the DAP Secretary , that:

- It is unlikely that any neither more than a single CA-14 Aircraft.....Nor any more than one CA-14A aircraft....will be produced.
- The CA-15 Fighter ....the company has an order for one prototype authorised by the War Cabinet.....There is no programme at present for any future production of this type.....War Cabinet Minute No 2403, dated 5th October 1942 be changed to a prototype using a Pratt and Whitney R2800 Series engine.....

To ensure that the DAP funding and CAC Orders were aligned and correct, a Amendment to Order was raised on the 28th June 1943 confirming the following:

C.S.1472.

AMENDMENT TO ORDER

28/ 6 /1943.

Please note and arrange for your copy of the undermentioned Order to be amended as shown—

Order No. C.S.1472 on Commonwealth Aircraft Corporation.

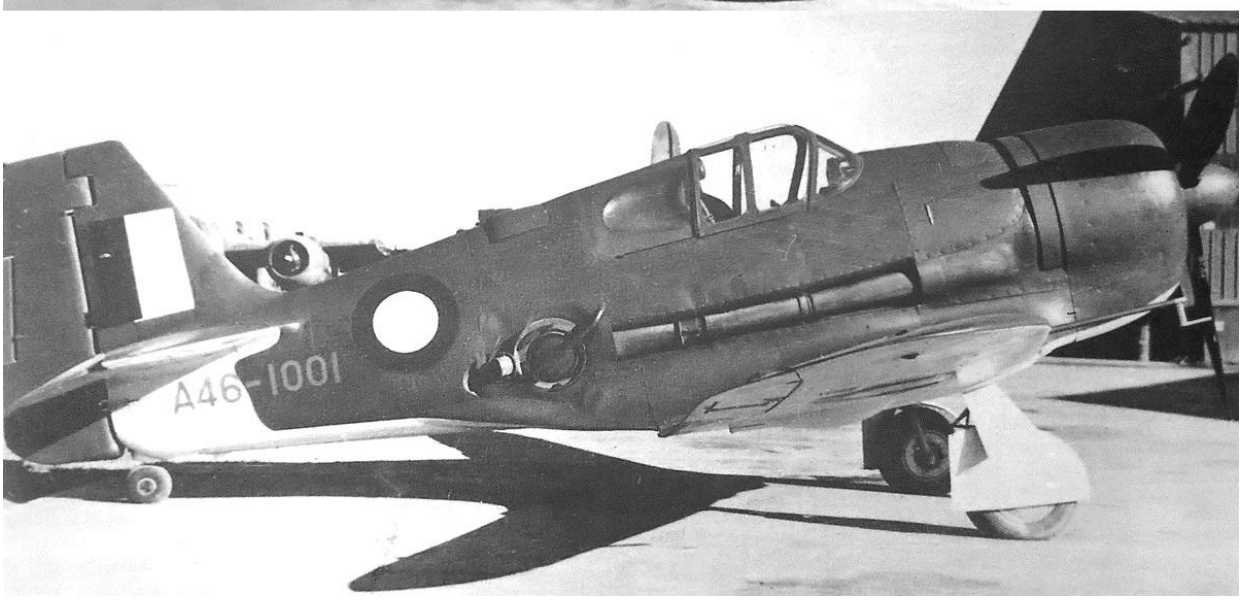
for 200 Boomerang Interceptor Aircraft Type CA.12.

Amendment:— Amended nomenclature for Boomerang Aircraft to cover application of major engineering changes on the 106th Aircraft.

Aircraft 1 - 105 (inclusive) To be known as the Boomerang Mk. I (C.A.C. Version C.A.-12).

Aircraft 106 - 200 (") To be known as the Boomerang Mk. II (C.A.C. Version C.A.-13).

The development linage pictures of the CA-14 and CA-14A, A46-1001



Issuing CAC Construction Numbers before production qualities are known?

Background
Recorded History states (in Books written in the eighties/ nineties), all generally accept verbatim that the CAC Construction Number of CA-14A A46-1001 and CA-15 A62-1001 are recorded as: MSN #1074 and MSN 1073, respectively.

I keep thinking, "Impossible", for how could they come up with that exact MSN number ...#1074, when numbers were not finalised for either CA-19 Boomerang s or for CA-16 Wirraways, before A46-1001 even first flew in January 1943?

The original order batch of 100 Wirraway Interceptors was approved for production at the expense of cancelling some 245 Wirraway Trainers on account for the EATS (RAF) during December 1941.

So in late 1942, we are to believe that a future MSN block of two numbers were reserved following yet to be announced resumption of either CA-16 Wirraways (starting at A20-623 MSN 1075) or the yet decided on final CA-19 Boomerang number (A46-249 MSN 1072) in this timeline of early to mid 1943 before the known final number of Boomerangs to be built, or even the follow-on number of the 135 x CA-16 Wirraways to be built.

I think not, for as blank is the below plate, *ask yourself this* ...how did they know in December 1942 when they were building the CA-14 Prototype that the last serial of a CA-19 was to be limited at #1072, (A46-249), when only the final numbers were approved seven months later in July 1943?

But, I may accept that A46-1001 in its final CA-14A guise may have had the CAC MSN plate #1074 attached to it in 1944 when it arrived back in the RAAF after its rebuild to that standard.

Because final numbers weren't known until the 8th July 1943, when the War Cabinet on advice of the DAP (Revisited in 1944 per Agendum No 527/1944) could not justify the production of the proposed production of a further 120 Boomerang aircraft, for which it could not see no operational or training need. In minute No 2960 dated the 9th July 1943, the War Cabinet directed:

- That the production of Boomerang aircraft be slowed down and that tooling and production of the Mustang be accelerated to the fullest possible extent; and
- That an order for not more than 50 additional Boomerang aircraft be placed with the Commonwealth Aircraft Corporation to assist in maintaining the organisation until the Mustang comes into production;

Wirraway Production for attrition and wastage was recommenced in October 1943 after a production order in mid 1943.

Below, causing more confusion, is the final DAP reconciliation of the Boomerang Project in 1945. An excerpt of Official record of disbursement of Project funds: Aircraft numbers contradicts known numbers with 252 aircraft stated, including a CA-12 Prototype and one CA-14A Prototype. [177]

WAR CABINET MINUTES	TYPE OF A/C OR ENGINE	NUMBERS OF AIRCRAFT OR ENGINES ORDERED		ESTIMATED COSTS APPROVED BY WAR CABINET £	NUMBERS OF AIRCRAFT OR ENGINES		FI EXPENDITUR TO DATE
		AIRCRAFT	ENGINES INCLUDING SPARES		DELIVERED TO DATE	STILL TO BE DELIVERED AND RATE OF DELIVERY	
W.C.A. 397/42 Min. 2403-5.10.42 W.C.A. 298/43 Min. 2960- 9.7.43 W.C.A. 365/43 Min. 3019- 6.9.43 W.C.A. 36/43 Min. 2596-30.1.43 W.C.A. 554/44 Min. 3925-7.12.44	Boomerang C.A.12	252 (includes 2 Prototypes - one C.A.12 and one C.A.14A).	312	5,017,000	252	Completed.	

Even if you delete one per possible error of including CA-15 Project, you are still one over the total produced CA-12 Boomerangs. [178]

<u>The Final Numbers sorted, only as DAP[179] and Treasury could:</u>
Both qualities of type on order as at 30th August 1943 were:

- CA-16 Wirraways was 100, with a further 150 being considered per requirements to 30th June 1945. <u>Request per requirement went in from RAAF on 7th May 1943.</u> (With the end of the war arriving, then the number was reduced to 135 airframes per post war requirements, starting from MSN 1075, ending in MSN 1209)
- The order for 49 x CA-19 Boomerangs were not in place by August 1943. Consideration for a total of 120 x CA-14 types with Exhaust driven Superchargers was first proposed in July 1943 prior to this decision and order.

Only on the 15th December 1943, was there an order for an additional 49 CA-13s (Later re-designated as CA-19), per the submitted DAP Production Demand #1473, was officially confirmed within DAP Production Order# CS.3400, and sent to the Commonwealth Aircraft Corporation. (This was instead of the intended run of 150 CA-14 aircraft sought previously)

A further Order included within the advice was Production Order# CS.3500, for one only CA-13 Boomerang Interceptor airframe, fitted with a R1830, type S3C4G, Wright Wasp engine, incorporating several modifications to a Type CA-14:

- P&W R1830, type S1C3G Wasp
- Curtiss Electric Airscrew
- Engine Mount increased to length
- Engine cowls and fairings modified to accommodate engine and aircrew
- Special Magneto for High Altitude work
- Rear Fuselage structure changed to take
- Turbo Blower
- Ducts and intercooler installation
- Front fuselage and fairings changed
- Air Intake in port side fairings
- Leading edge of centre section and wheel well fairing changed
- Fin and Rudder altered
- New Instrument panel with extra instruments installed for blower and tests

This CA-14 Aircraft to be further modified to convert same to Type CA-14A, by incorporating the following modifications:

- Engine: *Pratt and Whitney R2000 Twin Row Wasp*
- New Airscrew: Type to be approved by RAAF
- Installation of Fan necessitating –
- Extended propeller shaft
- New Engine cowls and fairings
- New type gills and
- New Port side fairings
- New Intercooler
- New Turbo Infuser
- Bulkhead in rear fuselage
- Change of oil cooler installation and duct

Complete aircraft (49 x CA-19s).....while no doubt of the desirability of these modifications on standard Boomerangs, the tests are designed to determine the advisability of incorporating them in Boomerangs with fan cooling.

After the tests have been carried out, the need for these modifications will be reviewed:

- The modified fin and rudder of the higher aspect ratio type
- The straight centre section leading edge
- Fitment of an air cleaner.

These modifications are to be based on the experimental units fitted to aircraft **A46-157** and **A46-103** and which have been submitted to the satisfactory full scale flight tests in the RAAF Performance and Special Duties Flight.....production of modification sets for the retrospective application to all aircraft of the CA-12 and CA-13 types supplied to the RAAF against previous contracts.

Of interest was the sourcing of the Pratt and Whitney R2000 Twin Row Wasp for the CA-14/CA-14A. Originally in late 1943, it was intended to use a "spare" R2000 S1C3G in the CA-11 Woomera Programme.

As it was same type per requirements, but not of a "de-couple drive "type needed for the CA-11, it was "sourced" by the CA-14 Team and, after some modification fitted to A46-1001.

DAP finally caught up with CAC's non approved use when P&W R2000 S1C3G #82 was approved to the CA-14 under Order #A.14355 dated 7th October 1943. In June 1944, Mr Wackett stated that two special

Boomerangs were handed over to the RAAF:

- One being fitted with the first production Cooling fan (**A46-157**:Author)and the other
- with the first experimental cooling fan and a turbo supercharger (**A46-1001**: Author)

Finally, on the 6th December 1944, nearly two years after the building (and its first flight) of the CA-14 Prototype, authority was finally given to clarify the existence of this one off aircraft:

- For the sake of clarification it might be explained that the total number of Boomerang aircraft to be manufactured is 250 with 200 against Demand No 1024 and 50 in respect of Demand No 1473, the latter including one (1) aircraft to be fitted with turbo super charger (Demand No 1758): signed Mr M C Langslow Secretary DAP. (Original order for 100 CA-12s was under Demand No 719)

- Letter to CAC dated 28th December 1944: The Manufacture and supply of the CA-14, for which Order No CS.3500 has been reserved, was authorised in our contractual letter of the 15th December 1943. Originally this was under Demand No 1026 dated 10th December 1942.

The last CA-19 Boomerang, **A46-249**, stamped with CAC MSN 1072, was delivered ex CAC on the 31st January 1945.

CA-13 A46-157 fitted with first production Cooling Fan

Summary and thoughts:

Opining, It seems only after it was rebuild as a CA-14A that it finally got its CAC Plate; MSN 1074.

<u>Did you read about of a little unknown CA-12 “CA-14” Prototype?</u>

The error of two prototypes by DAP (CA-12 and CA-14) is perhaps due, I think (and seemingly not widely known or in written form per Boomerang Researchers past and present), is in reference to a further one off CA-12/CA-14A Hybrid Boomerang.

<u>A46-103</u>, was delivered by CAC four to five months after the first flight of the CA-14, to the RAAF on the 26th June 1943.

Used as a second CA-14 aerodynamic prototype, it was the first of only two Boomerangs (the other was CA-14A **A46-1001,** a rebuild of itself) fitted with the broader cord rudder and squared tail unit, along with the straight centre wing section, of the proposed CA-14 Production finished design.

Co-incidence, the production assembly timeline of this aircraft falls in with the original Order CA-14 Specifications per the 7th October 1942, *and the airframe was due to be delivered on the 6th October 1942 initially per construction schedules.*

More realistically, **A46-103** may have been modified as a CA-14 Prototype following **A46-1001’s** 27th May 1943 accident, to ensure continuity of the development whilst A46-1001 underwent rebuild and refinement.

In any case, it was not delivered until the 26th June 1943 to the RAAF. APU Tests dated 9th September 1944 acknowledged the differences and squared off Fin appendages per drawing were already on it.

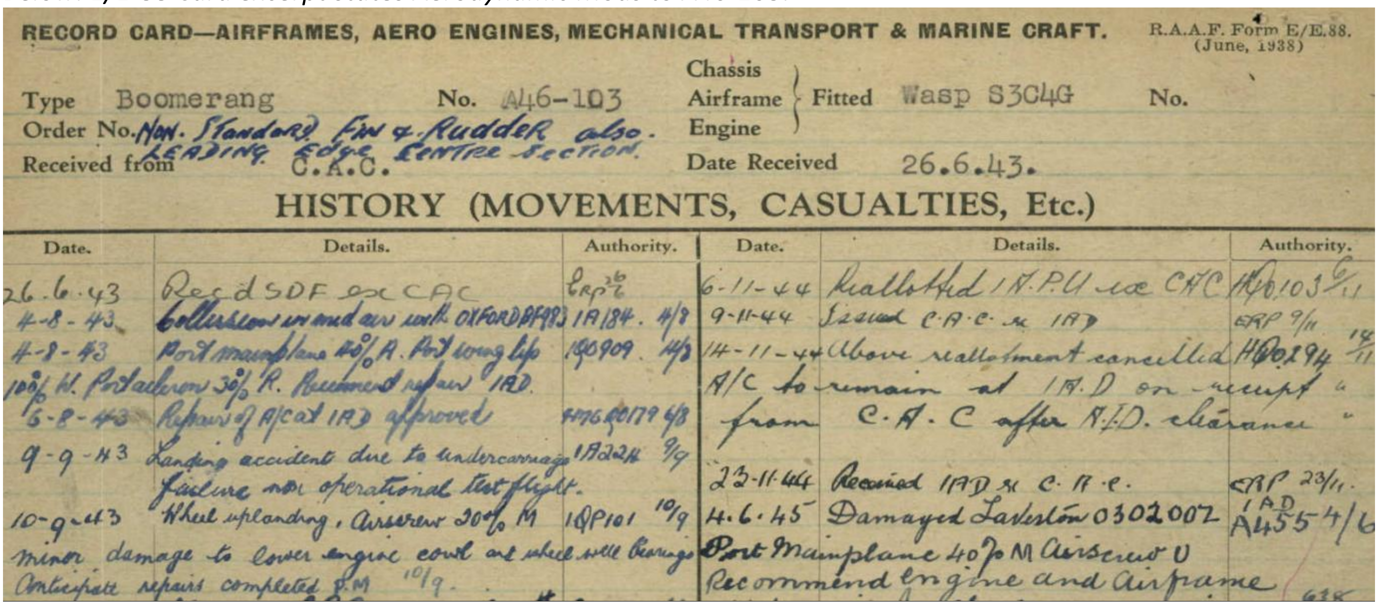
In the same RAAF 1AD delivery period of the last delivered CA-12’s: **A46-100 to A46-105**.

*Thereafter at CAC there was a break of two months before the first CA-13, **A46-106**, was delivered.* A few weeks of tests later, it was almost destroyed in a mid-air collision on the 4th August 1943.[180]

My research per E/E-88 Cards has this aircraft as the aircraft and A46-230 being used in high altitude and performance tests with CSIR in 1944, it did not include the stated A46-1001 in some publications.

The mix up is mainly due to the Main Planes of A46-1001 and others used in CSIR fatigue tests post 1945(Including A46-103 later).

Below: E/E-88 Card excerpt states Aerodynamic Mods to A46-103.[181]



RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT & MARINE CRAFT. R.A.A.F. Form E/E.88. (June, 1938)

Type Boomerang No. A46-103 Chassis / Airframe / Engine Fitted Wasp S3C4G No.

Order No. NON. STANDARD FIN & RUDDER also. LEADING EDGE CENTRE SECTION.

Received from C.A.C. Date Received 26.6.43.

HISTORY (MOVEMENTS, CASUALTIES, Etc.)

Date.	Details.	Authority.	Date.	Details.	Authority.
26.6.43	Recd SDF ex CAC	ERP 26/6	6-11-44	Reallotted 1 A.P.U ex CAC	HQ.103 6/11
4-8-43	Collision in mid air with OXFORD AF983	1A184. 4/8	9-11-44	Issued C.A.C. ex 1AD	ERP 9/11
4-8-43	Port mainplane 40% A. Port wing tip	1Q909. 4/8	14-11-44	Above reallotment cancelled	HQ.294 14/11
100% W. Port aileron 30% R. Recommend repair 1AD.			A/C to remain at 1A.D on receipt		"
5-8-43	Repair of A/c at 1AD approved	... 4/8	from	C.A.C after A.I.D. clearance	"
9-9-43	Landing accident due to undercarriage failure non operational test flight.	1A224 9/9	23-11-44	Received 1AD ex C.A.C.	ERP 23/11
10-9-43	Wheel up landing, Airscrew 20% M	1QP101 10/9	4.6.45	Damaged Laverton 0302007	1AD A455 4/6
minor damage to lower engine cowl and wheel well bearings			Port Mainplane 40% M Airscrew U		
Anticipate repairs completed S.M 10/9.			Recommend Engine and Airframe		

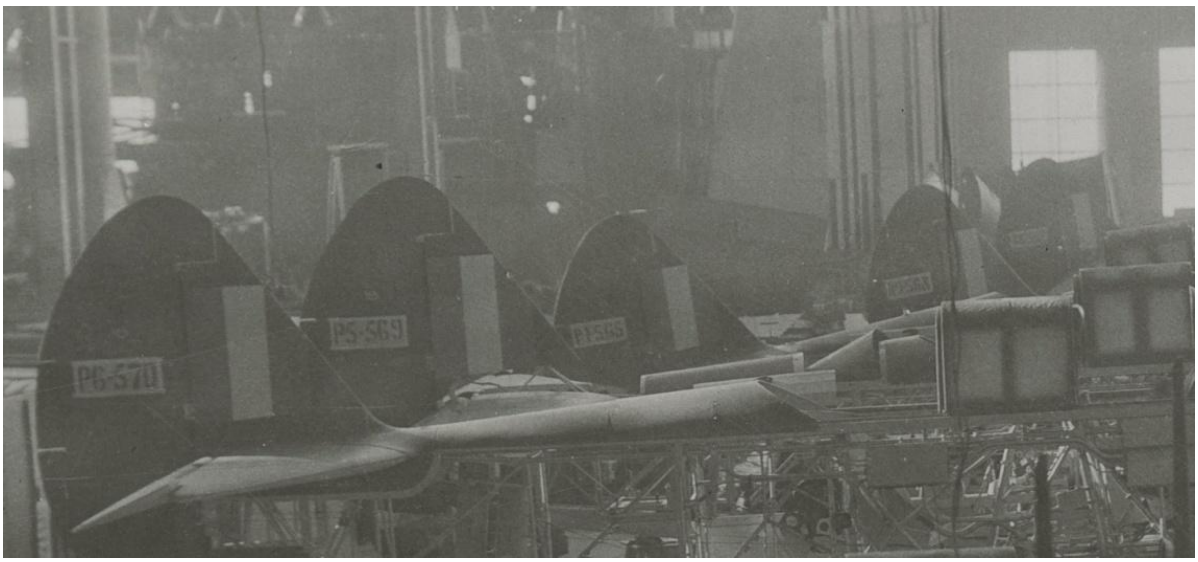
Addendum: The CAC Build Number System examined up close and explained

Not often observed on other types, an Alphabetical Production Block type numbering system was used by CAC Aircraft during 1941 to 1945 per standards of existing equipment and standards finish of Wirraways. It shows that the Alphabetical Production standard Prefix used for each Production Type standard, with a maximum of twenty-six characters available.

This reflects the Block system of build of aircraft build to a certain level of standard and modification level. Observational Photographical examples are as follows:

- Here is CA-8 Wirraway F7.491, being the seventh aircraft of build standard with the Alphabetical single prefix letter "F", followed by the Customer's RAAF Stores number, that became **A20-491** in the RAAF.

- Here are CA-9 Wirraways with an Alphabetical single prefix letter "P", followed by the aircraft number within that "P" batch then the stated the Customer's RAAF Stores number: P6.570, P5.569 and P1.565 which became **A20-570, A20-569 and A20-565** in the RAAF.



- Here CA-16 Wirraways with an Alphabetical single letter “E”, followed by the aircraft within that “E” batch then the Customer’s RAAF Stores number: E2.668, E3.669, E4.670 and E5.671 . These became **A20-668 to A20-671** in RAAF Service

- Here another shot of CA-16 Wirraways with an Alphabetical single letter “E”, followed by the aircraft within that “E” batch then the Customer’s RAAF Stores number: E1.667 and behind, D10.665, becoming A20-667 and A20-665 (Missing is D11.666, where the devil is it?)

The CAC Alphabetical Production Block type numbering system was also used for Boomerang Production Line as design and equipment changes were introduced

- Obviously, CA-12 “A1” is **A46-1** as built in May 1942

- This CA-12 is the second aircraft of Batch “M” standard and numbered with the Customer’s RAAF Stores number, 37. M2.37 would serve in the RAAF as **A46-37**

- This CA-19 is the ninth aircraft of Batch “E” standard and numbered with the Customer’s RAAF Stores number, 238. E9.238 would serve in the RAAF as **A46-238**

- The one and only found confirmation for me of a CAC construction number of a Boomerang: **A46-46** was #869, per SPF Performance trials listed in March 1943. Since then one further, A46-90 per 924.

AIRCRAFT : Boomerang Model C.A.12.

R.A.A.F. NO. : A46-46.

MANUFACTURERS SERIAL NO.: 869.

DATE OF MANUFACTURE. : February, 1943.

The main external differences between this and the prototypes which were tested in the Flight previously are :-

(1) New blade shape of the airscrew.

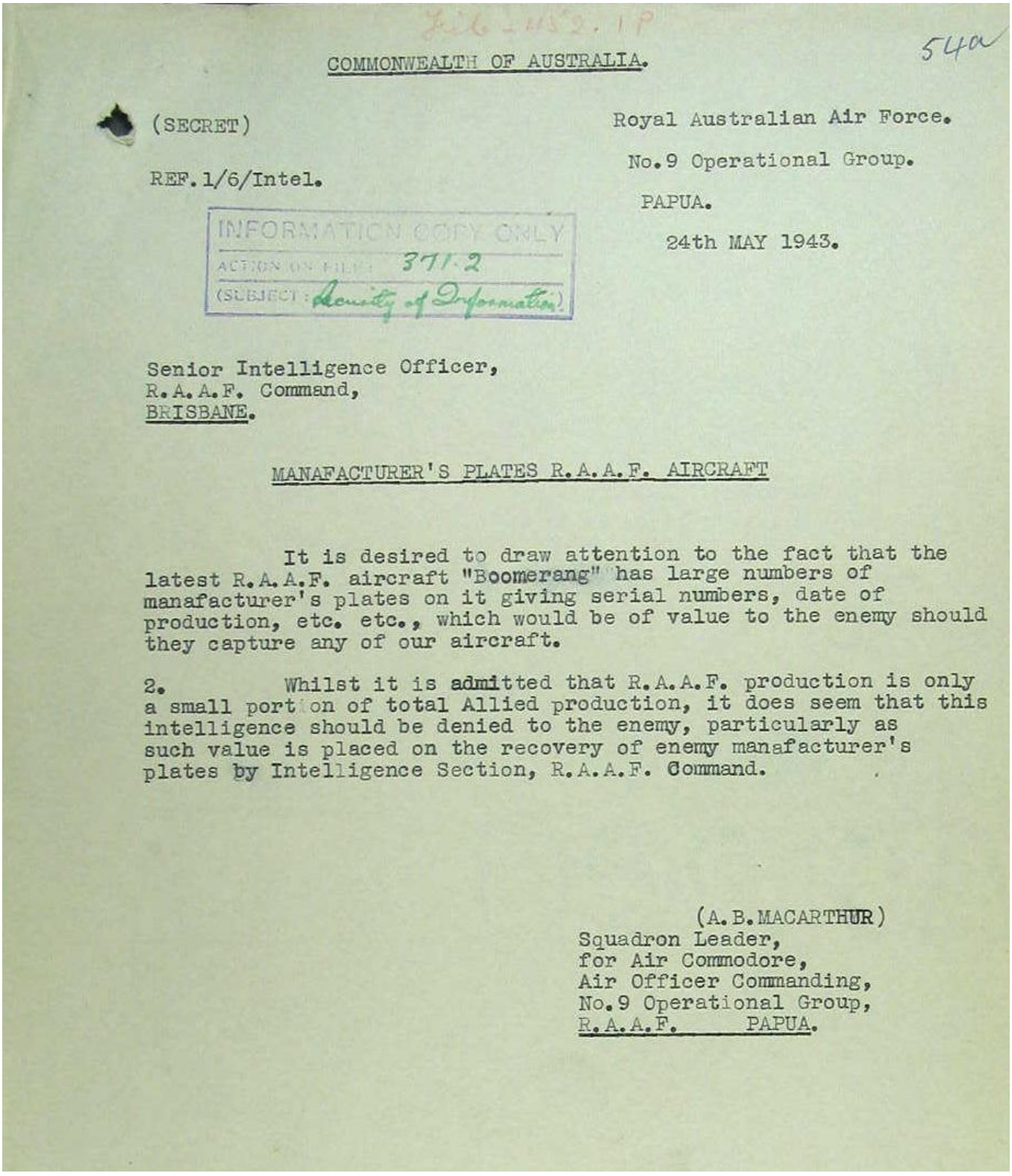
(2) Airscrew provided with a spinner.

(3) Redesigned wheel covers.

(4) Fairing strip over gap created by opening the cowl gills at their leading edge.

Too many MSN plates say the RAAF on our Boomers!!!

The RAAF's No 9 Operational Group thought there were far too many plates on the Boomerang anyway!



COMMONWEALTH OF AUSTRALIA.

540a

(SECRET)

Royal Australian Air Force.
No.9 Operational Group.
PAPUA.
24th MAY 1943.

REF.1/6/Intel.

INFORMATION COPY ONLY
ACTION ON FILE: 371.2
(SUBJECT: Security of Information)

Senior Intelligence Officer,
R.A.A.F. Command,
BRISBANE.

MANAFACTURER'S PLATES R.A.A.F. AIRCRAFT

It is desired to draw attention to the fact that the latest R.A.A.F. aircraft "Boomerang" has large numbers of manafacturer's plates on it giving serial numbers, date of production, etc. etc., which would be of value to the enemy should they capture any of our aircraft.

2. Whilst it is admitted that R.A.A.F. production is only a small portion of total Allied production, it does seem that this intelligence should be denied to the enemy, particularly as such value is placed on the recovery of enemy manafacturer's plates by Intelligence Section, R.A.A.F. Command.

(A.B.MACARTHUR)
Squadron Leader,
for Air Commodore,
Air Officer Commanding,
No.9 Operational Group,
R.A.A.F. PAPUA.

A46-157, fitted with the geared production standard Cooling Fan as installed by CAC.

Sources:

- A1196 1/502/26 PART 2 Fighter Aircraft CA 15 Part 2 Access status: Open Location: Canberra 1943 - 1945 Item 199211
- A2676 3805 War Cabinet Minute No 3805 - Wackett CA 11 bomber and CA 15 fighter - Question of cessation of projects Access status: Open Location: Canberra 1944 - 1944 Item 1567115 1943 Item 139381
- A1196 1/502/21 PART 1 CAC [Commonwealth Aircraft Corporation] - Interceptor Project (CA 12 Boomerang Part I) Access status: Open Location: Canberra 1941 - 1945
- A1196 1/502/21 PART 2 CAC [Commonwealth Aircraft Corporation] Interceptor Project (CA 12) Boomerang Aircraft Part II Access status: Open Location: Canberra 1941 – 1944
- A2670 298/1943 War Cabinet Agendum - No 298/1943 - Aircraft production - Proposed extension of orders for manufacture of Boomerang aircraft Access status: Open Location: Canberra 1943 - 1943 9019711
- A705 9/49/5 Boomerang - A46 [CA12] - performance data 1942-1945 Access status: Open Location: Canberra circa1942 - circa1945 164590
- E/E-88 Cards A46-1 to 249/1001

Curtiss Corner: A29-521 "Svengali" GA-N

“Svengali” means:
“A person who exercises a controlling or mesmeric influence on another, especially for a sinister purpose.”

A29-521 CW#947 C/N29157 Mac (Air) #A29-1121 Type P-40N-5 USAAF# 42-105375 15-Sep-43
Sqn Code: GA-N
Lend Lease: Case 200, Indent 2012A, RFDA-322A, Diversion 406-A Aircraft number Aus15 #19 Ex Oakland California.

Received 3 Air Depot, Amberley ex USA 09/09/43. Received by 22 Repair and Salvage Unit (Reserve Pool) ex 3 Air Depot 17/04/44. Received 75 (I/F) Squadron RAAF ex 22RSU RP 13/04/44. Coded GA-N, and named "Svengali".

On the 9th August 1944, A29-521 was part of a twelve aircraft flight that was tasked to carry out an air patrol over Cape Sansapor. Take-off was 1330K Hrs.

Three flights; Frolic Red, Blue and Yellow, each with four aircraft, numbering one to four, with a air spare, the thirteenth aircraft, flown by F/Sgt Robson, not required, which therefore returned to base.

Over the target at 1445-1550K Hrs, sadly around 1540KHrs, Yellow flight suffered an operational accident involving three out of four aircraft in their flight.

Whilst turning onto a Northerly course at 8000 feet, Yellow 3 A29-407 collided with the port main of Yellow Leader(A29-521) , tearing off the whole aileron and 25% of the remaining portion of the Port Wing, causing an explosion of the 0.50cal ammunition.

When next sited by witnesses, both Yellow 3 and Yellow 4 (A29-571 (GA-K?) “Margarite II") were locked together at 7000 feet, only separating at 6000 feet when both then went into inverted spins separately.

Both pilots were ordered to bail out by Red Leader, but neither replied or did so. One aircraft was seen to right itself, but then dived straight in.

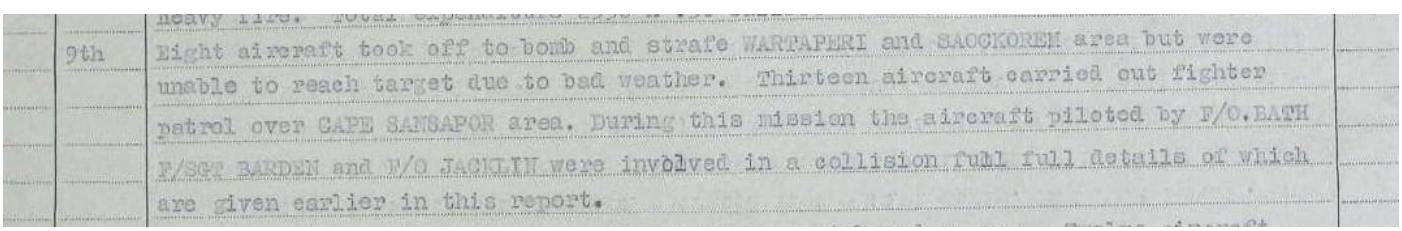
Yellow 3 and Yellow 4 finally crashed 300 yards apart into the jungle south-east of Cape Sawasar, three miles east and two miles from coast, killing both pilots. Pilot of A29-407, F/O Richard William Raven Bath Serv#420116 was killed; Pilot of A29-571; F/Sgt William Morris Barden Serv#17409, who had been promoted Warrant Officer at the time unknowingly, also crashed nearby and was killed.

On Tuesday 22nd October 1946, RAAF Search Party went ashore at the village of Mega and proceeded to both crash sites of A29-407 and A29-571 guided by local guides. The later was first inspected having crashed in a deep ravine and apparently disintegrated. Pilot remains found nearby.

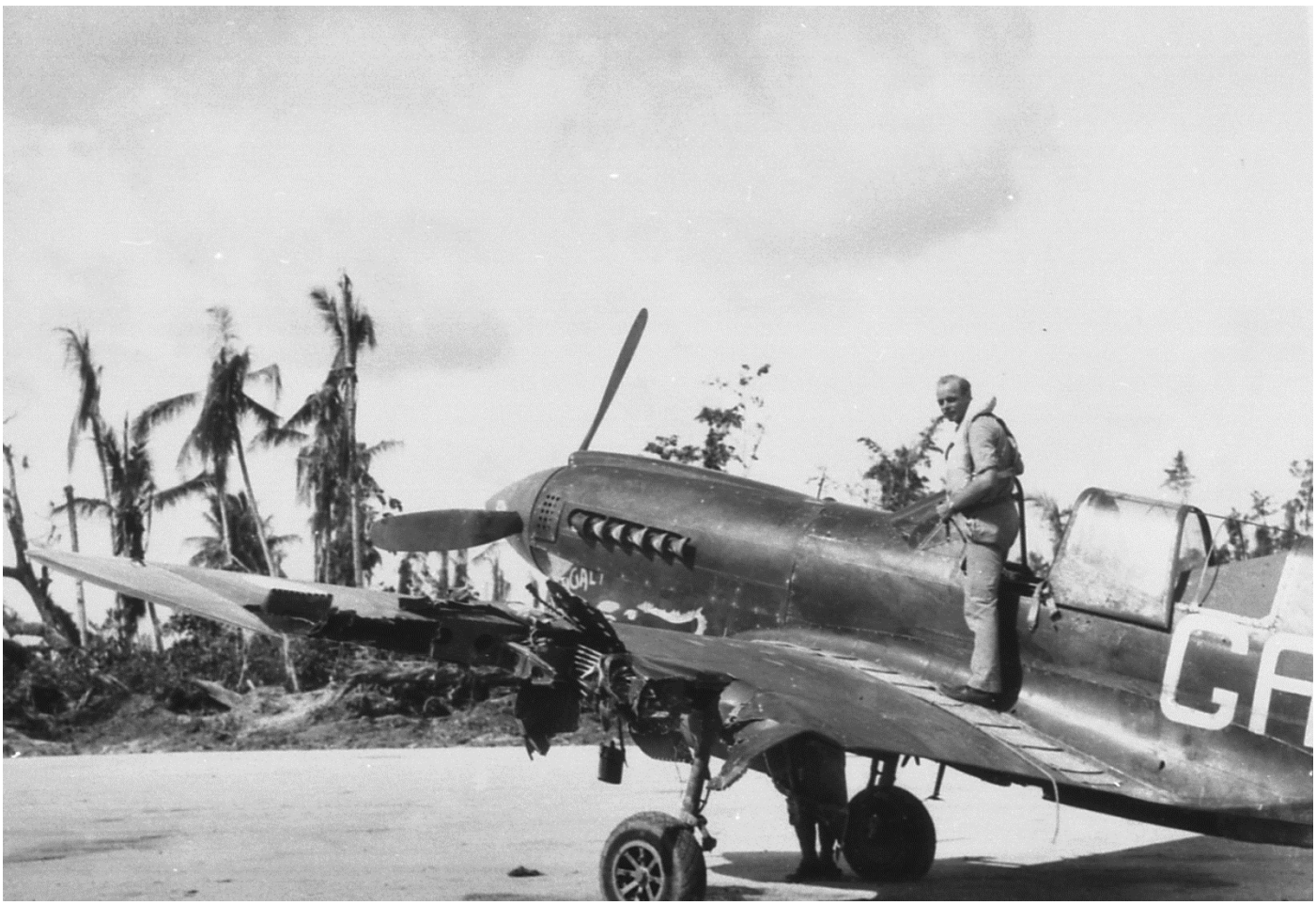
A quarter of a mile further up the ravine, the search party found the largely intact wreck of A29-407, with the remains of the pilot in the enclosed cockpit.

A third P-40N aircraft, A29-521 GA-N "Svengali" Yellow 1 ,piloted by F/O Thomas R Jacklin Serv#405738, was also struck by Yellow 3, and despite having extensive damage and loss of 25% of his port mainplane, flew back 200 miles back to base and landed safely uninjured.

This third P-40N was actually filmed in "Island Target", on landing, showing the damage, and the entry of No 75 Squadron's A50 History Sheet doesn't really capture the moment per film.


9th Eight aircraft took off to bomb and strafe WARTAPERI and SAOCKOREM area but were unable to reach target due to bad weather. Thirteen aircraft carried out fighter patrol over CAPE SANSAPOR area. During this mission the aircraft piloted by F/O.BATH F/Sgt BARDEN and F/O JACKLIN were involved in a collision full full details of which are given earlier in this report.

Taxiing in after the sortie: note, wing damage aside; the bypass Carburettor intake panel on engine cowl is sprung open and, that the rear view Perspex glazing is missing.



After shut down, Tom, somewhat shocked and relieved, has a closer inspection and realises how lucky he was to be able to control his aircraft.

After the accident, the aircraft was transferred to No 22 Repair and Salvage Unit (Detachment) on the 13th August 1944, for repairs and a wing change. It was then transferred into No 11 Repair and Salvage Unit as a Pool aircraft on the 4th November 1944. It was received by No 78 Squadron RAAF and coded HU-K or R on the 15th November 1944.

With the influx of later models, A29-521 was received by No 14 Repair and Salvage Unit on the 22nd May 1945. All codes were removed.
With war's end and the demobilisation of various units, including No 1 and No 14 Repair and Salvage Unit, it was transferred to No 60 Operational Base Unit for preparation and ferry to Storage by No 1 Repair and Salvage Unit for No 6 Air Depot at Oakey Queensland.
Ferried home t Australia, it arrived for storage at No 6 Air Depot on the 21st November 1945.
There, designated as Category E Storage on the 1st October 1946, it was authorised to be written off on the 19th November 1946 and past to DAP on the 26th September 1947.
This action was completed by the 15th November 1948. Last installed Allison V1710-81 was Engine #36460.

Combat Report on the day: 9th August 1944.

NARRATIVE REPORT : No.75 SQUADRON, R.A.A.F.

MISSION NO: KAM 17 9th AUGUST, 1944 75 SQUADRON

OBJECT: Cover GLOBETROTTER

NO.OF A/B: Detailed: 13 Took off: 13 Retd.during mission 3

	FROLIC RED		BLUE		YELLOW
1.	F/O. ALLENDER	1.	W/O. COOK,F.	1.	F/O. JACKLIN
2.	F/Lt. McCAUL	2.	P/O. McLAUGHLIN	2.	F/SGT. BECKER
3.	F/O. ANDREWS	3.	F/SGT GUSTER	3.	F/O. BATH
4.	F/SGT. STUART	4.	F/SGT ROBERTS	4.	F/SGT BARDEN

F/SGT ROBSON took off as spare and returned at 1415/K. as no aircraft left the formation.

TIMES: Take off: 1330/K Landed 1650/K T.O.T. 1445-1550/K

RESULT: Cover completed with nil enemy air sightings.

OWN CASUALTIES: At 1535/K whilst the formation was effecting a turn-about on to a Northerly course at 8000 feet near CAPE SAWASSAR Yellow 3 (F/O. BATH) collided with the port mainplane of Yellow Leader tearing off the whole of the aileron and approximately 25 per cent of the remaining portion of the port wing of Yellow Leader and causing explosion of many rounds of ammunition and when next sighted by the formation Yellow 3 and Yellow 4 (F/O.BATH and F/SGT BARDEN respectively) were locked together at approximately 7000 feet and at 6000 feet they separated and went into inverted spins. At 4000 feet the pilots were ordered to bail out but neither did so. One aircraft appeared to correct the spin at about 2000 feet and then continued straight down in a dive. The airplanes crashed about 300 yards apart in heavy rain forest at the base of a hill on the north bank of a creek approximately 2 miles East of MEGA. One exploded on contact and the other emitted a large quantity of black smoke on crashing.

INDIVIDUAL REPORTS: After the initial collision which was apparently caused by a sharp increase in altitude by Yellow 3 (statement by Yellow 2) there was no witness to the second collision but both airplanes were seen interlocked at approximately 7000 feet by Red 3. Several members of the formation heard Red Leader order the pilots of the two crashing airplanes to bail out at 4000 feet but neither pilots bailed out. After the crash Red Leader contacted CHARTER (and fighter direction ship) and asked that a message be passed to AUTO requesting a search for the wrecked airplanes. CHARTER replied "Roger Roger Message Received".

COMMUNICATIONS: It was impossible to communicate legibly with AUTO thus necessitating the passing of messages through CHARTER.

COMMENT: From the personal reports of all pilots who witnessed the airplanes crashing there is no possibility of either of the pilots F/O. BATH or F/SGT BARDEN having survived the crash.

(T.J. HILLERMAN)
Flying Officer,
Intelligence Officer,
NO.75 SQUADRON,R.A.A.F.

(R.C. KIMPTON)
Flight Lieutenant,
T/Commanding,
NO.75 SQUADRON, R.A.A.F.

3346

E/E-88 Card:A29-521

RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT & MARINE CRAFT. R.A.A.F. Form E/E.88. (June, 1938)

Type KITTYHAWK No. A29-521 Chassis / Airframe / Engine Fitted ALLISON V1710-81 No.

Order No. 42-105375

Received from U.S.A. Date Received 9-9-43

HISTORY (MOVEMENTS, CASUALTIES, Etc.)

Date.	Details.	Authority.
9-9-43	Recd 3AD ex USA.	Exp 3AD Q068 9/9
9-9-43	Renumbered RAAF No	HQ Q921
8-10-43	To be held as Reserve Aircraft	HQ Q4451 8/10
15-3-44	Allotted 22R.S.U. R.P. ex 3 A.D.	Q0682
19-3-44	Issued 22RSU RP ex 3AD	3 Q0101 EAP 19/3
18-3-44	Allotted 11R.S.U. ex 22RSU	13/3
16-4-44	Issued 22RSU RP ex 13ARD RP	BQ0769 16/4
17-4-44	Received 22 RSU RP ex 3AD	22 Q553 17/4
21-4-44	Allotted 75 Sq. ex 22R.S.U. RP	Q830 21/4
24-4-44	Issued 75 Sq. ex 22 RSU RP	22Q258 24/4
25-4-44	Recd 75 Sq ex 22R.S.U. RP	5Q1 25/4
10-8-44	Allotted 22RSU ex 75Sqn for A/F repairs	10 Ops Q420
13-8-44	Issued 22RSU ex 75Sqn.	75 Q024
10-8-44	Collided with A29-407 & 571	58 PSO BC900
	approximately 2 miles E of Kelgal A/c	75 Q220 10/8
	returned to base. Airframe dam.	
	Port mainplane 100% W Airframe	

Date.	Details.	Authority.
10-8-44	Engine (U) repairable	75 Q0240 10/8
	but beyond capacity of	
	unit request replacement	
15-8-44	Received 22RSU ex 75 SQ.	22 Q609 15/8
29-10-44	Allotted 11 R.S.U. R.P. ex 22R.S.U. R.P.	10 Ops Q28 29/10
4-11-44	Issued 11RSU ex 22RSU D	22RP 4/11
4-11-44	Rec'd. 11 RSU ex 22RSU D	22 Q299.
15-11-44	Allotted 78 SQ ex 11 RSU	10 OPS Q0112 15/11
15-11-44	Recd 78 SQ ex 11 RSU.	78 Q0418 15/11
15-11-44	Issued 78 SQ ex 11RSU.	11 Q477 15/11
~~7-3-45~~		
17-5-4[illegible]	[illegible]	
7-3-45	Rec'd 11 RSU ex 78 SQn.	11 Q901 7/3
7-3-45	Delete all reference to above	11 Q903 8/3
	receipt	

H.P. 17M. 9/42 KITTYHAWK A29-521 11RSU.

RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT & MARINE CRAFT. R.A.A.F. Form E/E.88. (June, 1938)

Type KITTYHAWK No. A29-521 Chassis / Airframe / Engine Fitted ALLISON V1710-81 No.

Order No. 42-105375

Received from U.S.A. Date Received 9-9-43

HISTORY (MOVEMENTS, CASUALTIES, Etc.)

Date.	Details.	Authority.
19-5-45	Allotted 14 RSU ex 78 Sqn	1 STAF Q037 19/5
	for engine change	
21-5-45	Issued 14 RSU ex 78 Sqn	78 Q029 21/5
22-5-45	Recd 14 RSU ex 78 SQ	14 Q110 22/5
2-11-45	Issued 60 OBU ex 14RSU	14 Q264 2/11
5-11-45	Recd 60 OBU ex 14RSU	60 Q202 5/11
20-11-45	Allotted 6AD ex 60OBU for storage	11 Gp Q155 20/11
19-11-45	Issued 6AD SA ex 60 OBU	60 Q178 19/11
21-11-45	Rec'd 6AD SA ex 1RSU	21/11
21-11-45	Rec'd 6AD SA ex 14RSU	800/18/EN4
[illegible]	[illegible]	
1.10.46	To be stored [illegible]	

DATE	DETAILS	AUTHORITY
—	OFFERED FOR DISPOSAL	LIST AIR B 2588
19.11.46	AUTHORISED FOR WRITE-OFF	AD. 161
26.9.47	PASSED TO D.A.P.	AS 14/3076
15.11.48	ACTION COMPLETED BY DAP	DAP MEM 050 5101

KITTYHAWK A2C [illegible]

Odd Shots: The many faces of "3AD"s F-4E-43-MC A69-7234 and the one other that got away! F-4E-43-MC A69-7218

Pictured with in this third batch, 69-7218 was damaged in an aerial refuelling incident over Kansas en route St Louis to George AFB on the first leg of its delivery flight.

The RAAF pilot, Wg Cdr Ridgway, then picked up the allotted replacement F-4E-43-MC 69-0307[182] and flew it to George AFB. 69-7218 was never delivered to Australia. Since the RAAF took possession of the Phantoms at St Louis it would be fair to say that 69-7218 was technically on charge to the RAAF.

On the 4th October 1970, as one of the last pair of twenty-four F-4Es delivered, 69-7234 was crewed by **Captain Chris G Patterakis** (USAF) and **F/Lt Lance J Halvorson** (6 Sqn RAAF) as the second last F-4E to touch down at Amberley. *F-4E-43-MC 69-7220 had the honour of being the last to land, with F/Lt's Brendan Roberts and Trevor Richardson as its crew.*

Of historical interest, Captain Chris G Patterakis had flown as Left Wing in the USAF Demonstration Team the Thunderbirds during the 1966-1967 season (flying F-100s), then later as a Major, would become Unit Commander/Leader in the from December 1975 to January 1977 period, when flying the T-38A.[183]

Just a fortnight later on the 19th October 1970, on its first Australian flight and with only some 27 total airframe flight hours, 69-7234 suffered an accident when flown by a No 6 Squadron Crew (F/Lt J L Ellis (0315190) and F/Lt E B J Bolger (023741)), when the aircraft suffered Cat 4 damage after engaging the arrester wire, which then broke.

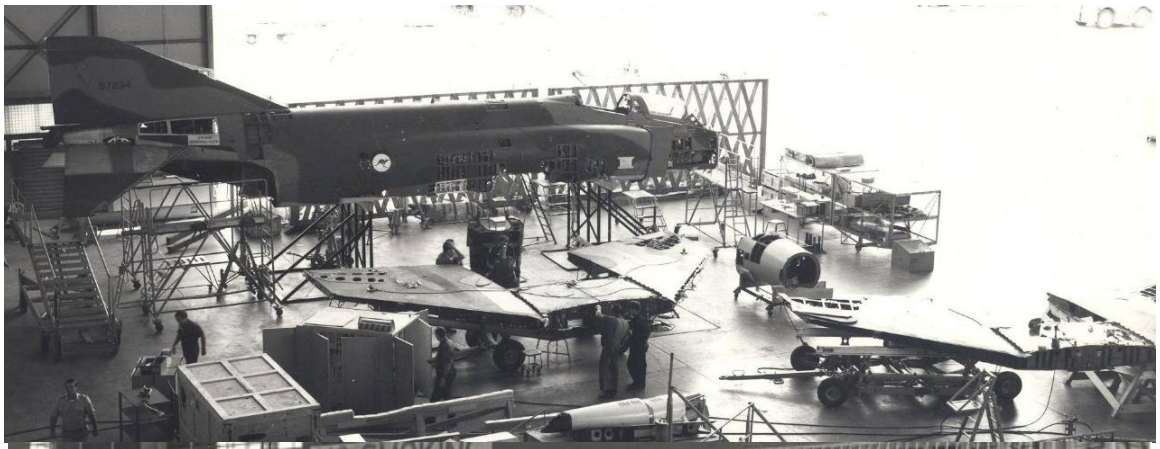
"The aircraft suffered a left generator failure and malfunctioning bus tie contactor. As a result, the brake anti-skid system and nose wheel steering were not available. As there was a prevailing 15 knot crosswind, normal USAF procedure with these systems inoperative, was to fly an approach-end engagement of the hook cable.

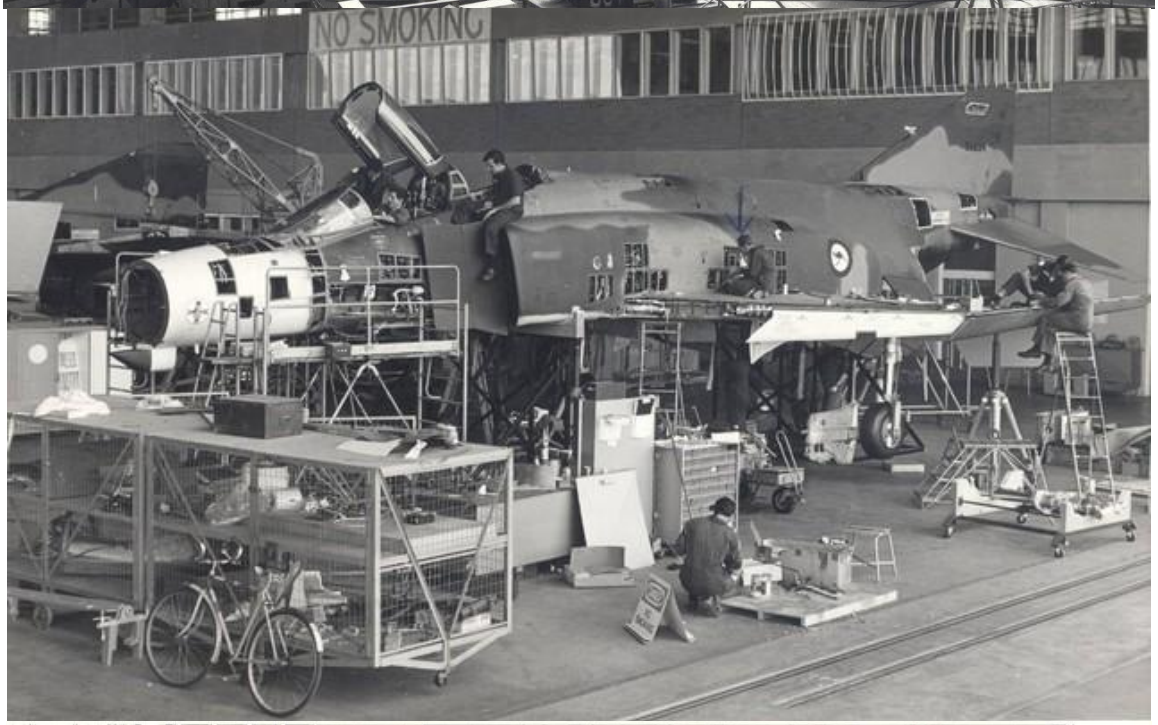
USAF instructor pilots in the Amberley tower recommended the same action. Following touchdown, at about 150KIAS, the hook engaged the cable on RW15 centreline. As the nose wheel trampled the cable, the cable oscillated and; together with slack in the cable, caused the cable to come off the drum, then run out and break. The Phantom yawed to the right and ran off the runway before yawing back left when the left main wheel hit soft dirt.
The cable whipped back around the aircraft, damaging the external tanks, landing gear doors and the radome.

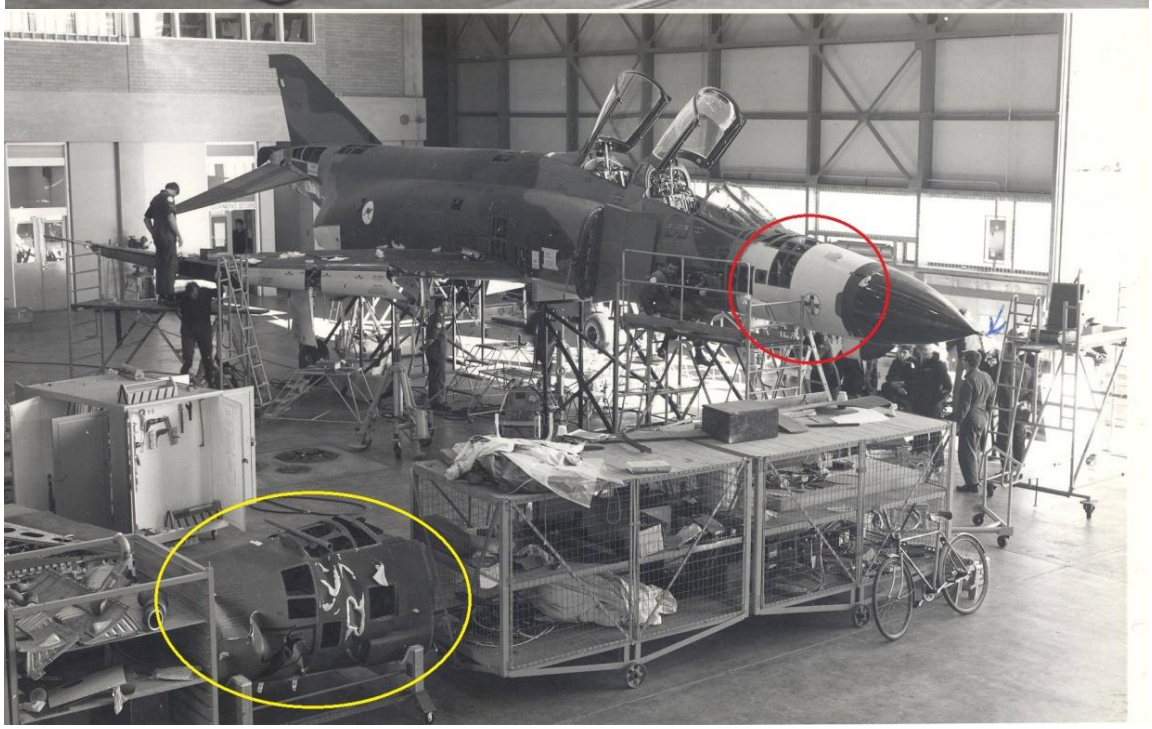
In addition, 69-7234 suffered extensive damage to the front fuselage, right wing and left and nose landing gear structures." [184]


2

The 3 Air Depot Rebuild in stages. *All RAAF Amberley Accident and rebuild Pictures: Photo Terry Neilson*



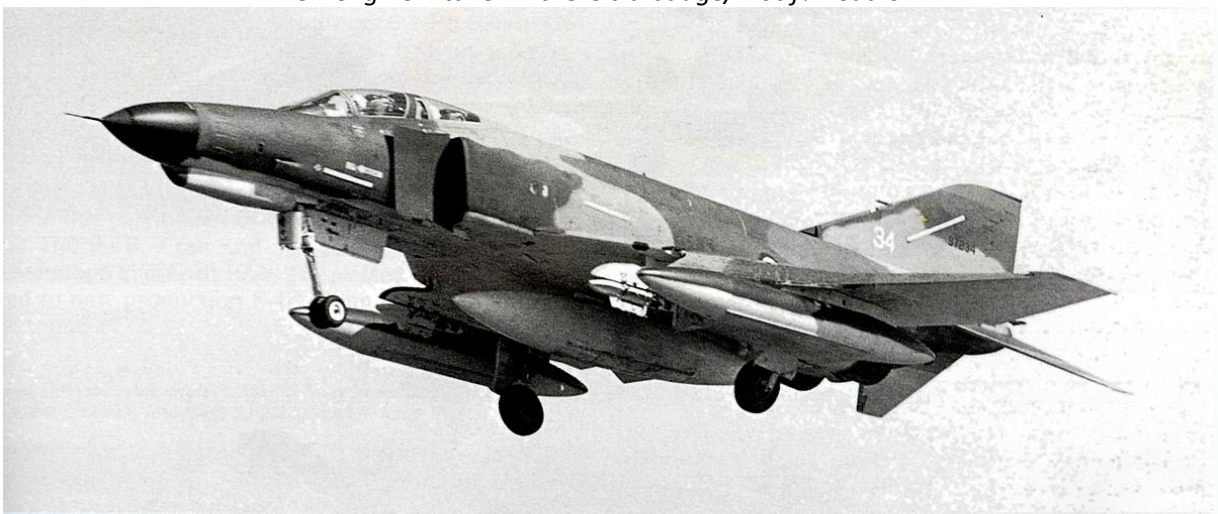




Circled in Red is the replaced nose section, in yellow is the crushed “old” nose section.

On port main door, there appears to be a painted dedication list of those involved in the rebuild

On engine intake……there's a badge/motif? Read on.



After the paint shop, it was then into the air after some 18,750 man-hours of rebuilding, by 482 Sqn RAAF, 3AD. It was yet to receive its new gun port exhaust extraction system. Test crew for the flight was Sqn Ldr Ken Smith and F/Lt Frank Burtt

Of note: it was generally accepted that no RAAF Phantom carried unit or special markings, however, perhaps someone can explain this motif , rear of starboard intake post rebuild of 69-7234?

Contrary to belief and history, both sides of the unpainted nose section also had this motif before respray, and again reapplied to rear of the air intakes for its test flights.

So, what was it?

It was zap,...the 3AD's Badge's "Rooster" and Maltese Cross.

It was back in service with 82 Wing by the 15th October 1971. A large crack was also found in its stabiliser during the rebuild, which meant most of the other aircraft stabilisers required an X-ray in early 1972.

Later on the 22nd October 1972, it was ferried back to the United States as part of the first flight of six being returned. Following a service, it was transferred to the 526th Tactical Fighter Squadron (86th Tactical Fighter Wing) which was based at Ramstein AFB in West Germany.

The main radar of the F-4G was the same Westinghouse AN/APQ-120 that was fitted to the F-4E, although a new digital processor was added.

All of the F-4Gs were rebuilds of Block 42 to Block 45 F-4Es. *In total some 133 F-4Es were converted, including the prototype.*

The first of these aircraft (69-7254) was modified by McDonnell and began flight trials in December of 1975. Subsequent F-4G aircraft were modified by the Air Force's Ogden Air Logistics Centre at Hill AFB in Utah. The last modification was completed in 1981. A two-part Performance Update Program (PUP) was undertaken in the mid-1980s.

The first phase was the expansion of the capability of the on-board computer by adding a new Unisys CP-1674 digital processor.

The second phase was the upgrading of the APR-38 to APR-47 standards. The initial batches of 115 F-4Gs, modified at the Ogden Air Logistics Centre, were fitted initially with the AN/APR-38. [185]

Photographed now converted as an F-4G Wild Weasel when with the 562nd Tactical Fighter Training Squadron, 37th TFW, early 1980's based at Georges Air Force Base.

Pictured with the 81st TFS (or later 480th TFS) when assigned to 52nd TFW, based at Spangdahlen in West Germany, in European "lizard" Scheme in mid to late 80's.

F-4G 69-7234 was one of these during 1979-80 and flew with several USAF Wild Weasel Squadrons, including the 562nd TFTS, 37thT FW. Later when assigned to the 81st TFS (52TFW) she went to War during Operation Desert Storm and was credited with 4 kills on Iraqi Radar sites.[186]

Following the Gulf War, there was a reduction of the USAF Structure and Order for battle with the F-4G being replaced by F-16CJ's in frontline units and with the remaining F-4Gs being handed over to the National Guard in fewer Units. The result was that the trickle of F-4Gs going to AMARC Boneyard from 1990-91.

The F-4G and its older staple mate, the RF-4C, by the mid nineties in ever decreasing numbers, were the last versions of the Phantom to remain in front-line service with the USAF.

Included in the first batch to be decommissioned, F-4G 69-7234 was accepted and cocooned as "FP761" on the 20th September 1991. By that time it had been just serviced and re-sprayed in two tone grey "Egyptian Grey" scheme after its return from the Gulf War.

Now with 480th TFS 52nd TFW, and pictured with ex RAAF 69-7210 in rear, on its way to the Gulf.

Shortly after the Gulf War, under USAF Contract, Tracor Flight Systems of Austin, Texas started to convert stored F-4Gs into QF-4G aerial targets. 69-7234 was assigned to the program, converted and accepted back into the USAF on the 31st August 1998 and received by the 82nd ATS.

Spotted 2001 “with a man in the loop”, in its pristine “Egyptian Grey” scheme when with the 82nd ATS.

After some six years as a QF-4G, 69-7234 was finally destroyed “unmanned” on the 21st July 2005.

The final QF-4G (69-7583) was converted by the then BAE Systems and delivered in October 2000.

Our missing 25th F-4E-43-MC: 69-7218 that carried the red Roo

Following its refuelling accident, 69-7218 was repaired and accepted back into the USAAF. Pictured above, being pristine, and now in-service with the 4th TFW at Seymour Johnson AFB in 1973.

Later assigned in 1977 to Moody Air Force Base, with the 70th TFS in the 347thTFW and carried the MY Tail Code. The following year it was assigned with the 68th TFS in the 347thTFW.

Later, it too was converted into an F-4G in 1976-78 and served eventually with the 90th TFS in the 3rd TFW based at Clark Air force Base in the Philippines with tail code “PN” and a Shark mouth.

She too went to AMARC from the 3rd TFW based at Clark Air force Base direct a few years earlier on the19th December 1990 as FP598. After her selection for conversion to a QF-4G, she went to Tyndall Air force Base 28th March 2000. The end came two years later, as 69-7218 was destroyed on the 20th March 2002.

Sources:
https://qam.com.au/qam-content/aircraft/phantom/RAAF-Phantoms.htm
http://www.raafaact.org.au/topics/F-4E_Jan07.html
http://forum.virtualthunderbirds.com/viewtopic.php?t=2807
http://www.adf-serials.com.au/3a69.htm

End Notes:

RAAF AIRCRAFT MARKINGS SINCE 1950: SQUADRON MARKINGS – PART 10 by John Bennett 2018

[1] The spelling of Fisherman's Bend has always been a point of conjecture, and varies with maps – I have chosen to standardise on Derek Buckmaster's spelling in, *CAC Ceres, Australia's Heavyweight Crop-Duster*, Design Bureau, Melbourne, 2017, p.viii.
[2] See *ADF Serials Telegraph* Vol.8 Issue 4, Spring 2018:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202018%20Spring.pdf
[3] See ADF Serials Telegraph Vol.7 Issue 4, Spring 2017:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Spring%20.pdf
[4] J Bennett, *Aircraft of the ADF – A7 Aermacchi MB-326H*, in Australian Aviation, Canberra, May 1993, pp.53-57. Of the six types evaluated the Canadian CL41 Tutor was considered the runner-up; B Hill, *Wirraway to Hornet*, Southern Cross, Melbourne, 1998, p.170.
[5] Hill, p.170.
[6] N Parnell & T Boughton, *Flypast – A Record of Aviation in Australia*, AGPS, Canberra, 1988, p.312
[7] Hill, p.170.
[8] Parnell & Boughton, p.312.
[9] Hill, p.171.
[10] Bennett, *Aircraft of the ADF – A7 Aermacchi MB-326H*, Australian Aviation, pp.54, 56.
[11] NAA M258 88 (72), *Personal Papers of PM Harold Holt*, Dept of Supply letter of 24 DEC 1964.
[12] http://www.adf-serials.com.au/2a99.htm
[13] S Brogden, *History of Australian Aviation*, Hawthorn Press, Melbourne, 1960, p.173.
[14] http://www.adf-serials.com.au/2a99.htm
[15] A Stephens, *Going Solo, The RAAF 1946-1971*, AGPS, Canberra, 1995, p.153.
[16] *Units of the RAAF, A Concise History, Vol 8 Training Units*, AGPS, Canberra, 1995, p.41.
[17] http://www.radschool.org.au/Course%20Photos/Pilots/Pilots.htm
[18] R Frost, *RAAF College and Academy*, RAAF, Canberra, 1991, p.42.
[19] Parnell & Boughton, p.312.
[20] A Webber, *CT4 Airtrainer in Service with the RAAF*, List Print, Geelong, 1992, pp.5, 22.
[21] Bennett, *Aircraft of the ADF – A23 Pilatus PC-9*, in Australian Aviation, Canberra, March 1995, p.36.
[22] Bennett, *Aircraft of the ADF – A19 CT-4A*, in Australian Aviation, Canberra, August 1994, p.58.
[23] *Units of the RAAF, A Concise History, Vol 8 Training Units*, AGPS Canberra, 1995, p.42.
[24] Ibid.
[25] RAF A.P.119A-0601-1D A/L.9, 'Application' para.5, MAR 1972.
[26] http://www.adf-gallery.com.au/gallery/Macchi-A7-061
[27] P Mason & D Mottram, *Mirage IIIO Colours & Markings*, Mushroom Model Publications, Redbourn UK, 2005, printed by Stratus, Poland, 2014, p.135.

[28] The third orange-white Mirage was A3-115, which was not sold to Pakistan in 1990 and was retained at ARDU Edinburgh, where it subsequently received this scheme; in 2018 this aircraft was allocated to the SAAM at Port Adelaide. The other ARDU Mirages A3-16 and A3-76 did not receive this scheme.
[29] Australian Air Publication AAP 7021.004-1(AM1), *Aircraft Finishing Schemes, Materials and Processes*, of 4 JUL 2011, p. 1F-1.
[30] J Lever, *2OTU RAAF and 8OTU RAAF*, Sunnyland Press, Red Cliffs Vic, 1999, p.226.
[31] *Units of the RAAF, A Concise History, Vol 8 Training Units*, p.71.
[32] Mason & Mottram, p.73.
[33] Darren Mottram's Macchi website:
http://www.clubhyper.com/reference/macchidm_1.htm#
[34] Darren Mottram's Macchi website:
http://www.clubhyper.com/reference/macchidm_1.htm#
[35] Parnell & Boughton, p.312.
[36] http://www.adf-serials.com.au/3a7.htm
[37] https://www.airforce.gov.au/sites/g/files/net3736/f/minisite/static/1469/RAAFmuseum/research/units/cfs.htm
[38] http://fighterjet.com.au/2016/12/15/macchi-mb-326h/
[39] https://en.wikipedia.org/wiki/Minigun
[40] Ferranti ISIS brochure ES-ESD-ISIS-CEN2, Ferranti Ltd Edinburgh, Scotland.
[41] https://cdn.rochesteravionicarchives.co.uk/img/catalog/ZZ_1375623390_DDBR0261+%28O%26A-1b%29.pdf
[42] *Units of the RAAF, A Concise History, Vol 8 Training Units*, p.63.
[43] Ibid.
[44] Ibid.
[45] *Units of the RAAF, A Concise History, Vol 8 Training Units*, p.73.
[46] *Units of the RAAF, A Concise History, Vol 2 Fighter Units*, AGPS, Canberra, 1995, p.52.
[47] *Units of the RAAF, A Concise History, Vol 3 Bomber Units*, AGPS, Canberra, 1995, p.84.
[48] *Units of the RAAF, A Concise History, Vol 2 Fighter Units*, p.75.
[49] 79SQN held a "Farewell Macchi/Welcome Hawk" event at RAAF Pearce on 16 MAR 2001 with new Hawks A27-05 to A27-09; *adf-serials* database, A27 Hawk.
[50] *Australia's Air Chiefs*, Air Power Studies Centre, Canberra 1992, p.79.
[51] Darren Mottram's Macchi website:
http://www.clubhyper.com/reference/macchidm_1.htm#
[52] Parnell & Boughton, p.312.
[53] *Aircraft of the ADF – N14 Aermacchi MB-326H*, in Australian Aviation, August 1996, p.45.
[54] ADF Australian Air Publication (AAP) 7021.004-1(AM1), of 4 JUL 2011, Sect 2 Chap 1, Annex 1G-1.
[55] Bennett, *Aircraft of the ADF – N14 Aermacchi MB-326H*, in Australian Aviation, August 1996, p.45.
[56] T Boughton & N Parnell, *RAN Fleet Air Arm Aircraft,* in Journal of AHSA, Melbourne, Mar-Apr 1974, p.11.
[57] Bennett, *Aircraft of the ADF – N14 Aermacchi MB-326H*, p.45.
[58] *Gippsland Times*, "Sentinels at the Gate", 17 MAY 2018:
http://www.gippslandtimes.com.au/story/5406817/sentinels-at-the-gate/?cs=1198

No 3 SQUADRON A.F.C.PART II – AERIAL RECONNAISSANCE by John Bennett @2018

[59] Lt Col W A Bishop VC DSO* MC DFC, *Courage of the Early Morning*, cited in F M Cutlack, The Official History of Australia in the War of 1914-1918, Vol VIII, *The Australian Flying Corps*, AWM/UQP, Brisbane, 1984, (first published in 1923), p.199.
[60] H A Jones, *The War in the Air*, Vol II, Clarendon Press, Oxford, 1928, pp.165-8.
[61] H A Jones, *The War in The Air*, Vol III, Clarendon Press, Oxford, 1931, p.252.
[62] Jones, Vol II, p.167.
[63] Cutlack, p.436.
[64] Lt Gen Sir John Monash, *The Australian Victories in France in 1918*, IWM, London, 1920, p.14.
[65] N B Love, *The Autobiography of Nigel B Love*, Australian Society of World War I Aero Historians, Sydney, c 1968, Part One, Chap 2, p.2.
[66] Cutlack, p.429.
[67] C Lewis, *Sagittarius Rising*, Penguin, Harmonsworth, Middlesex, 1977, p.60.
[68] W M Lamberton, *Reconnaissance and Bomber Aircraft of the 1914-1918 War*, Harleyford, Letchworth, Herts, 1962, pp.191-2.
[69] Lamberton, pp.9, 10.
[70] G Norris, *The Royal Flying Corps*, Muller, London, 1965, p.118.
[71] P R Hare, *The Royal Aircraft Factory*, Putnam, London, 1990, p.260.
[72] J M Bruce, *RAF R.E.8*, Windsock Datafile 24, Albatros, Berkhamsted, Herts, 1990, pp.6, 9. This vertical aperture is discernable on underside photographs of the R.E.8, aligned with the trailing edge of the fuselage roundel.
[73] H A Jones, *The War in the Air*, Vol V, Clarendon Press, Oxford, 1935, p.424.
[74] Cutlack, p.207.
[75] M Baring, *Flying Corps Headquarters 1914-1918*, Buchan & Enright, London, 1985, p.85.
[76] Jones, Vol II, p.83; Norris, p.112.
[77] Cutlack, p.429.
[78] Jones, Vol II, p.174.
[79] Monash, p.172.
[80] AWM 25 85/163 Pt 2, "Instructions for Contact Patrol Work by Aeroplanes", GHQ OB/1656, 24 Dec 1916, p.2.

[81] Jones, Vol II, p.324.
[82] Jones, Vol II, p.173.
[83] Lamberton, p.193; Cutlack, p. 428.
[84] Of the 515 bombardments carried out by 69 Sqn/3 Sqn over 1917-18, only 6 were conducted by observers. Cutlack, p.435.
[85] Lamberton, pp.9, 10; Cutlack, p.436.
[86] H D Billings, *My Own Story*, self-published, Melbourne, 1989, p.70, RAAF Museum; 3 Sqn War Diary (Army Form C.2118), 17 Feb 1918, AWM; Baring, p.216; Cutlack, p.202.
[87] Cutlack, p.436.
[88] Billings, pp.69-70.
[89] PRO AIR 1/867/204/5/523, CRFC 1693G, dated 19 Sep 1917.
[90] Jones, Vol II, p.233.
[91] Jones, Vol III, p.359.
[92] Jones, Vol III, p.253.
[93] The term is supposed to have originated from 5 Sqn RFC in September 1915, with the name Archibald adopted from the music-hall song *"Archibald, Certainly Not".* Cutlack, p.445; Baring, p.43.
[94] K P Werrell, *Archie, Flak, AAA and SAM*, Air University Press, Maxwell AFB, Alabama, 1988, p.1.
[95] According to the 69SQN War Diary of 22 OCT 1917, Brearley only flew two transit trips and no missions on this day, nor was any night flying recorded – so obviously a posed publicity shot for the war correspondents.
[96] N Parnell & T Boughton, *Flypast*, AGPS, Canberra, 1988, p.8. The original aircraft is displayed at the Institute of Applied Science in Melbourne.
[97] The enemy machine was claimed as a DFW Aviatik two-seater, 69 Sqn Combat Report (Army Form W.3348) No 11 of 6 Dec 1917, AWM. Aviatik (built by Automobil-und-Aviatik) and DFW (Deutsche Flugzeugwerke) were similar reconnaissance aeroplanes, powered by in-line engines in pointed noses with chimney exhausts, and triangular fins. To add to the confusion, the DFW C.V aircraft, produced in higher numbers than any other German design of the war was also built by Aviatik, and designated the Aviatik C.VI. It is probable, therefore, the aircraft claimed was of the DFW C.V design.
[98] Jack Treacy, interview, source and date unknown, pp.3-4, courtesy of Neil Smith.
[99] This Albatros D.Va, numbered D5390/17, was returned as a war trophy, and is displayed in the Australian War Memorial.
[100] AA CRS A1195/1, 715/2/175; 69 Sqn RFC War Diary (Army Form C.2118), 17 Dec 1917.
[101] PRO AIR1/867/204/5/523, CRFC 1693G, dated 19 Sep 1917.
[102] L Rogers, *British Aviation Squadron Markings of WWI*, Schiffer, Atglen PA USA, 2001, pp.7, 132.
[103] B Robertson, *WWI British Aeroplane Colours and Markings*, Albatros Productions, Berkhamsted UK, 1996, p.12.
[104] Rogers, p.7.
[105] Monash, p.9.
[106] 69 Sqn RFC War Diary (Army Form C.2118), 1 Jan 1918.
[107] H A Jones, *The War in the Air*, Vol IV, Clarendon Press, Oxford, 1934, p.444.
[108] 3 Sqn War Diary, Jan 1918, p.4. Terminology then varied, like all AFC squadrons, with the unit sometimes referred to as No 3 Sqn AFC or the 3rd Sqn AFC. Historians have invariably settled on the ordinal form, as used by the RFC, as No 3 Sqn.
[109] 3 Sqn Combat Report (Army Form W.3348) No 14 of 25 Jan 1918.
[110] 3 Sqn War Diary, 17 Feb 1918.
[111] Love, p.4.
[112] Cutlack, p.217.
[113] 3 Sqn War Diary, Feb 1918.
[114] 3 Sqn War Diary, Jan-Mar 1918.
[115] Norris, p.45.
[116] A Imrie, *Pictorial History of the German Army Air Service*, Ian Allan, London, 1971, p.51.
[117] Jones, Vol IV, p.259.
[118] Jones, Vol II, pp.323-4.
[119] Jones, Vol II, p.147.
[120] Baring, p.200.
[121] Cutlack, p.223.
[122] M von Richthofen, *The Red Air Fighter*, Greenhill, London, 1990, p.52.
[123] Imrie, p.53.
[124] 3 Sqn War Diary, 23 Mar 1918.
[125] 3 Sqn War Diary, 31 Mar 1918.
[126] Jones, Vol IV, p.264.
[127] Maj Gen Sir Archibald Montgomery, *The Story of the Fourth Army*, Hodder & Stoughton, London, 1919, p.2.
[128] 3 Sqn Combat Report No 15, 1 Apr 1918. This DFW shot down by 3 Squadron was registered by the RAF as a captured enemy aircraft and became G160. B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester, 1987, p.46.
[129] H N Wrigley, *The Battle Below*, E G Knox, Sydney, 1935, p.63.
[130] Jones, Vol III, p.326.
[131] 3 Sqn War Diary, 6 Apr 1918.
[132] N Franks & A Bennett, *The Red Baron's Last Flight,* Grub Street, London, 1997, p.15.
[133] 3 Sqn Combat Report No 19, 19 Apr 1918.
[134] 3 Sqn Combat Report No 21, 21 Apr 1918.
[135] 3 Sqn War Diary, 21 Apr 1918; Cutlack, p.250.
[136] Franks & Bennett, p.27.
[137] W A Musciano, *Eagles of the Black Cross*, Obolensky, New York, 1965, p.92; Jones, Vol III, p.172.
[138] C E W Bean, *The Official History of Australia in the War of 1914-18, Vol V, The AIF in France*, Angus & Robertson, Sydney, 1937, p.701.
[139] Wrigley, p.67.
[140] Franks & Bennett, p.112.
[141] *70th Anniversary Royal Australian Air Force Art Exhibition*, RAAF Harry Hawker Collection at Collins Street Gallery, Melbourne, March 1991, pp.32-33.

[142] von Richthofen, p.154.
[143] 3 Sqn Combat Report No 20, 21 Apr 1918.
[144] Cutlack, pp.261-2.
[145] Montgomery, *Fourth Army*, p.3.
[146] Jones, Vol IV, p.388.
[147] 3 Sqn War Diary, 24 Apr 1918.
[148] Cutlack, pp.262-3; Wrigley, p.68.
[149] Montgomery, *Fourth Army*, p.4.
[150] Wrigley, p.30. It is probable that code numbers were not applied until arrival at Savy.
[151] **Squadron codes** apparently changed from **numbers to letters** in NOV 1917, probably when 69SQN moved to Bailleul in 2 Brigade, on transfer from 1 Brigade, in support of I ANZAC Corps on 16 NOV 1917. The 2 Bde R.E.8 squadrons then in JAN 1918 became 9 SQN RFC (XIX Corps), 7 SQN RFC (II Corps), 21 SQN (VIII Corps), 10 SQN RFC (XXIIA Corps), 53 SQN RFC (IX Corps), and 3 SQN AFC (Aus Corps). The code numbers and letters are determined from photographs, documents, and secondary sources and artwork. When shown in red, this is unconfirmed and assessed by pilots in known Flights and then by dates of the gaps of known allocations.
[152] A3754 was painted with the presentation inscription of "Narandera" instead of the correct "Narrandera" Isaacs p.176.
[153] AWM photo P00394.014 text provides details.
[154] On several occasions in records B5105 referred to as B5015.
[155] An AWM image of 'N' crashed labels the aircraft as B5860, but there are no references to this aircraft serving on 69/3SQN.
[156] AWM photo P09378.005 shows C2242 'S' crashed on landing and is labelled as 6/6/18.
[157] Isaacs (p.175) gives date taken on strength 3SQN as 12 Apr 1918, but first reference in 3 Sqn records is 8 May 1918, which aligns with the loss of the previous 'O' (A4404 "Sylvia") on 6 May 1918.
[158] Last recorded flight of C2795 on 3SQN was 17/10/18 from Montigny to Premont (Pickering/Hanson), but no mention of a crash. AWM photo P00355.024 shows crash of C2795, without a Sqn code letter.
[159] Jones, Vol III, p.352.
[160] Mr J White, AWM aircraft curator, interview with author, 15 May 1997.
[161] PRO AIR1/867/204/5/523, CRFC 1693G, dated 19 Sep 1917.
[162] L Rogers, *British Aviation Squadron Markings of WWI*, Schiffer, Atglen PA USA, 2001, pp.7, 132.
[163] Rogers, p.132.
[164] Pilots would normally fly their allocated aircraft within their Flight; Wrigley's *The Battle Below* (p.29) lists pilots within Flights, so therefore aircraft numbers can be matched to pilots and the Flight. The initial allocation of pilot/aircraft from the 69SQN War Diary on SEP 1917 can then be interpolated as follows (with the number code being allocated in SEP 1917, and changed to the letter code in NOV 1917). The R.E.8 serials are known (Squadron Order No.11 of 15 SEP 1917, p.2). The three Flights that deployed from South Carlton to Lympne on 21 AUG 1917, for the hop then across to France (which was delayed due weather until 9 SEP 1917) is listed below. Because pilots retained the same allocated aircraft, and remained in the same Flight, this assists tie-ups to the Squadron code letters. If this changeover of numbers to letters did occur sequentially, the initial 69 SQN code number sequence in SEP 1917 (then with letters in NOV 1917) appears to have been:

A FLT		**B FLT**		**C FLT**	
A3815	1 / A Anderson	A3755	7 / G Storrer	A4759	13 / N Brown
A3816	2 / B Sandy	A3756	8 / H Wrigley	B3430	14 / O Tregilles
A3817	3 / C Petchler	A3662	9 / J Clark	A3665	15 / P Brearley
A3818	4 / D Francis	B3420	10 / K Roberts	A3667	16 / Q Flockart
A3754	5 / E Kindred	A3661	11 / L Garrett	A3673	17 / R Herbert
A4758	6 / F Paterson	A4439	12 / M Shapira/Miller	A3821	18 / S Macgillycuddy

The final 3 SQN sequence at the end of flying on 20 FEB 1919 appears to have been:

A FLT		**B FLT**		**C FLT**	
E1108	A	H7265	G	H7043	N [unsure]
E248	B	C2326	H	C2748	O
B7917	C	H7042	J	C2610	P
D4842	D	F6016	K	E123	Q
H7040	E?	B5105	L	H7023	R
E225	F	C2978	M [unsure]	B4048	S

[165] Jones, Vol IV, p.358.

[166] It should be noted, aside from 2OTU and later 8OTU, that even No 24 Squadron RAAF was temporary allotted and operated Spitfire Mk Vs as from the 27th February 1943: RAF Serials: BS232(A58-93)/AR563(A58-6)/BS224(A58-88)/BS235(A58-96)/AR510 (A58-1)when based at Bankstown to equip one flight with a IE of 4 and a IR of 2. Wirraway Flight was 10 IE and 5 IR, and the P-39F Airacobra flight of 2 IE and 1 IR (within a few days, these two IE P-39Fs and one IR, A53-1, A53-3 and A53-7 , had crashed!). This detachment of six Spitfires finished on the 17th March 1943. Below: AR563 aka A58-6 of No 24 Sqn Feb 1943

[167] I must point out a single 80 Wing Spitfire MkVIII underwent a wing clipping without approval from AMSE in November 1944.

[168] (1) Telegraph Mr. Kerr and Mr. Magee each day when R.A.A.F. aircraft were handed over to A.T.C. for ferrying, using code name "Snake" for P-51 aircraft.

[169] The Republic Thunderbolts used in the UK trials were borrowed 8th Fighter Command P-47C's 41-6198 (P-47C-2-RE), 41-6319 and 41-6324 (Both P-47C-5-Res)

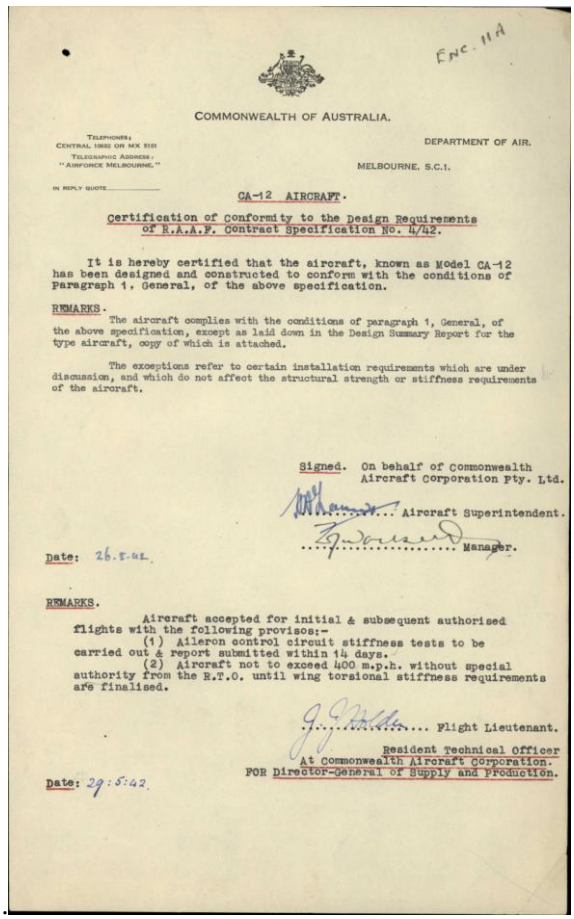
[170] Those eight P-40 Squadrons were: 75/76/77/78/80/82/84/86 Sqns RAAF, but also on the RAAF 53 Squadron Strength was a ninth,.120 Sqn NEIAF.

[171] First CA-17 Mk20, A68-1 had C/N 1326 ending with CA-18 PR.22 C/N 1525 as A68-200.

End Notes:Will the real CA-14 Boomerang step forward!! Gordon R Birkett @2019

[172]

The original Certification per A46-1 after its flight shows that later F/Lt John Holden who first flew A46-1001 was there on the day in an official capacity as the RAAF's Resident Technical Officer



ENC. 11A

COMMONWEALTH OF AUSTRALIA.

TELEPHONES: CENTRAL 1082 OR MX 5101
TELEGRAPHIC ADDRESS: "AIRFORCE MELBOURNE."

DEPARTMENT OF AIR.
MELBOURNE, S.C.1.

IN REPLY QUOTE

CA-12 AIRCRAFT.

Certification of Conformity to the Design Requirements of R.A.A.F. Contract Specification No. 4/42.

It is hereby certified that the aircraft, known as Model CA-12 has been designed and constructed to conform with the conditions of Paragraph 1, General, of the above specification.

REMARKS.

The aircraft complies with the conditions of paragraph 1, General, of the above specification, except as laid down in the Design Summary Report for the type aircraft, copy of which is attached.

The exceptions refer to certain installation requirements which are under discussion, and which do not affect the structural strength or stiffness requirements of the aircraft.

Signed. On behalf of Commonwealth Aircraft Corporation Pty. Ltd.

..... Aircraft Superintendent.

..... Manager.

Date: 26.5.42.

REMARKS.

Aircraft accepted for initial & subsequent authorised flights with the following provisos:-
(1) Aileron control circuit stiffness tests to be carried out & report submitted within 14 days.
(2) Aircraft not to exceed 400 m.p.h. without special authority from the R.T.O. until wing torsional stiffness requirements are finalised.

..... Flight Lieutenant.
Resident Technical Officer
At Commonwealth Aircraft Corporation.
FOR Director-General of Supply and Production.

Date: 29:5:42.

[173] *It was returned to CAC for repairs on the 3rd August 1942, and would eventually return on the 5th December 1942, for only a few weeks before being returned to CAC for further corrections to repairs on the 29th December 1942. Then again, after being received back at 1AD on the 4th January 1943, it was returned back to CAC by the 18th January 1943, before finally received in full working order on the 2nd February 1943, before being sent onto 2OTU on the 7th February 1943. On the 30th November 1943, it was received by the Central Flying School where it remained on strength until it unfortunately crashed on landing at Oakey on its way to be stored with 6AD, flown by F/Lt Palmer of 2AD, on the 21st March 1946.*

[174] On the 9th November 1942, 100CA-12s were on order. However by this time the DAP order was received, 105 CA-12s were fabricated (106 if you count the CA-14 fuselage) thus remaining 95 became CA-13s. Of interest, was the inclusion of three prototypes?

2496

COMMONWEALTH AIRCRAFT CORPORATION
PROPRIETARY LIMITED

BOX 779 H
P.O. ELIZABETH ST.,
MELBOURNE.

REG. OFFICE AND WORKS:
LORIMER STREET,
PORT MELBOURNE.

CABLES & TELEGRAMS
"COMAIRCOR"
TELEPHONE: MXY 770

ALL COMMUNICATIONS TO BE ADDRESSED TO THE COMPANY

9th November, 1942.

The Secretary,
Department of Aircraft Production,
G.P.O. Box No. 2093-S,
MELBOURNE .. C.1.

152.

Dear Sir,

Boomerang Production

We desire to acknowledge receipt of your letter of 6th November, increasing the existing order from 100 to 200 aircraft, and also providing for the construction of three (3) Prototypes.

The details are clearly understood by us, and are quite satisfactory.

Yours faithfully,

L. J. Wackett,
Manager.

LJW/BS.

FORM CS 8—C.12578—11/42

C.S. Amendment necessary 1522.

MEMORANDUM

CR.1522.

(For intra-organization use only)

RECEIVED MAIL ROOM JUN 23 1943 CENTRAL ADMIN. 10004

To: Manager, Central Supply

From: Secretary

Subject: Boomerang Aircraft D.A.P. Demand 1024. Date: June 21, 1943.

The following advice has been received from the Department of Air:-

"Further to my memo 134097 dated 10th December, 1942, it is requested that the contract with Commonwealth Aircraft Corporation be amended to provide for the following:-

Aircraft 1 - 105 (inclusive) to be known as the Boomerang Mk.1 (C.A.C.Version C.A.-12)

Aircraft 106 - 200 (inclusive) to be known as the Boomerang Mk.11 (C.A.C.Version C.A.-13)

Mk. 11 Delaney Shd be II

"The above distinction is necessary because of certain major engineering changes which will become applicable on the 106th aircraft."

Kindly note for your future guidance.

CC

for Secretary.

Manager, Central Supply

Demand DAP.1758 - Fitment of Exhaust Driven Turbo Supercharger to a Boomerang Aircraft.

December 28, 1944.

For your information I am attaching copy of Demand DAP.1758 allotting the sum of £15,000 for the equipping of an exhaust driven turbo supercharger to one Boomerang aircraft - known by C.A.C. as the CA.14.

The manufacture and supply of one CA.14 aircraft was inter alia authorised in our letter to C.A.C. of December 15, 1943, vide copy on File No. 1522/5. Order No. CS.3500 was then reserved but it is understood has not been issued. It will be apparent that the manufacture of the CA.14 is covered by Demand 1473 and the fitment of the turbo supercharger to this aircraft by Demand 1758.

Will you please make whatever amendments are necessary to Order No. CS.3500.

for Secretary

This form to be rendered in Quadruplicate by Demanding Officer.

ROYAL AUSTRALIAN AIR FORCE.

Form E.S. 3. (Revised Aug., 1937)

D.A.P.
CONTRACT DEMAND.

Demand No. D.A.P.1026.
Finance No. C. P 163
Contracts No.
Supply File No. A100/45.

TO THE SECRETARY,
~~CONTRACT BOARD~~.
DEPARTMENT OF AIRCRAFT PRODUCTION.

It is requested that arrangements be made for the purchase of the articles, or for the service, set forth hereunder :—

R.A.A.F. Indentfn. No.	Sealed Pattern No.	Specification No.	Description of Article or Service.	D. of Q.	Number Required.	To be delivered at.	Date by which Required.	Estimated Amount. Rate @ per	Estimated Amount. Amount	Remarks
1	2	3	4	5	6	7	8	9	10	11
			Prototype Boomerang Interceptor-Fighter fitted with a 2600-B 1700 h.p. Wright Cyclone engine and in accordance with R.A.A.F. Specification 1/42.	No.	1	To be taken by R.A.A.F. personnel.		ESTIMATED -	£25,000/-/-	INSPECTION SUPPLIES TO BE TO THE SATISFACTION OF THE DIRECTOR OF INSPECTION OR HIS DEPUTY OR ASSISTANT. GOODS MUST NOT BE DESPATCHED BEFORE INSPECTION AND RELEASE BY A.I.D. INSPECTOR

Funds available (Chargeable to Div. 55/3)

Authorizing Officer, Air Services.
Date 10/11/42

Finance Member, Air Board.
Date 11/11/42

Director-General Supply and Production
Date 8.12.42

5892—40 †

N.B.—If there be no Specification or Pattern Number, the officer submitting the demands is responsible that a full and accurate description of the articles demanded or services required is given above.

176

[177] NAA File:A1196 1/502/21 PART 2 CAC [Commonwealth Aircraft Corporation] Interceptor Project (CA 12) Boomerang Aircraft Part II Access status: Open Location: Canberra 1941 - 1944 item 199203 Page 19

[178] . They were:

- 105 x CA12 sequenced from MSNs 824 to 928
- 95 x CA-13 sequenced MSNs 929 to 1023
- 49 x CA-19s sequenced MSN s 1024 to 1072,
- and one CA-14A fitted with MSN 1074

[179] The Department of Aircraft Production thus became the organization responsible for arranging for the production of aircraft required by the Department of Air to supplement - and as far as possible to replace - the machines ordered overseas to give the RAAF the trainer and operational aircraft necessary for the defence of the Australian continent. It was also responsible for the development of facilities outside the RAAF establishment for the servicing of aircraft associated with the Empire Air Training Scheme and for the manufacture of spare parts necessary for aircraft being maintained both by the RAAF and by the civilian aircraft servicing contractors handling the trainer planes.

The functions of the Department as listed in November 1945 were*: " to arrange for the construction of aircraft approved by War Cabinet for use for the RAAF; to arrange for the overhaul and repair of training aircraft and of some operational aircraft and of aircraft engines for the RAAF; to procure components and parts required by the RAAF for its training and operational aircraft; to arrange for the manufacture in Australia of Merlin Rolls Royce engines; as agent for the Commonwealth Disposals Commission, to dispose of materials and parts surplus to the requirements of the Department."*

[180] *The aircraft, **A46-103**, had a mid air collision with **Oxford BF983** piloted by F/Sgt T H Hart (411141) on the 4th August 1943 when S/L James Herbert Harper (251382) of 1 AD was manoeuvring with the Wirraway camera aircraft, **A20-536**, piloted by Sqn Ldr D R Cuming (250553) during photo shoot and had his port wingtip cut through fuselage of the Oxford causing it to spin into ground.*

RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT & MARINE CRAFT. R.A.A.F. Form E/E.88. (June, 1938)

Type Boomerang No. A46-103 Chassis / Airframe / Engine Fitted Wasp S3C4G No.

Order No. NON. STANDARD FIN & RUDDER also. LEADING EDGE CENTRE SECTION.

Received from C.A.C. Date Received 26.6.43.

HISTORY (MOVEMENTS, CASUALTIES, Etc.)

Date.	Details.	Authority.	Date.	Details.	Authority.
26.6.43	Recd SDF ex CAC	ERP 26/6	6-11-44	Reallotted 1 A.P.U. ex CAC	HQ 0103 6/11
4-8-43	Collision in mid air with OXFORD AF983	1A184. 4/8	9-11-44	Issued C.A.C. to 1AD	ERP 9/11
4-8-43	Port mainplane 40% A. Port wing tip	1Q0909. 4/8	14-11-44	Above reallotment cancelled	HQ 0294 14/11
	100% W. Port aileron 30% R. Recommend repair 1AD.			A/C to remain at 1A.D on receipt "	
5-8-43	Repair of A/c at 1AD approved	HQ Q0179 4/8		from C.A.C after A.I.D. clearance "	
9-9-43	Landing accident due to undercarriage failure on operational test flight.	1A224 9/9	23-11-44	Received 1AD ex C.A.C.	ERP 23/11.
10-9-43	Wheel up landing, airscrew 20% M	1QP101 10/9	4.6.45	Damaged Laverton 0302002	1AD A455 4/6
	minor damage to lower engine cowl and wheel well bearings			Port Mainplane 40% M Airscrew U	
	Anticipate repairs completed PM 10/9.			Recommend engine and airframe	
6.10.43	Allotted CGS ex 1SDF.	QD410 6/10		this unit for check and repair	Cas Rep 638 Laverton
16-10-43	Above allotment cancelled	HQQ0736 16/10	15-11-45	Issued & Recd 1AD SA ex 1AD	ERP 15/11
10.1.44	Allotted 1APU for CSIR trials	Q0359 10/1	14-11-45	Storage category will be advised	1AD Q1294 14/11
6-11-44	Allotted CAC ex 1A.P.U.	HQ0103 6/11	27.12.45	Submitted to C.D.C. file 9/86/27	
	for clearance by A.I.D			73/21/1229 letter 134057. 30/1	
8-11-44	Issued 1AD ex 1APU	ERP 8/11			
8-11-44	Received 1AD ex 1APU	ERP 8/11			

H.P. 17M. 9/42 Boomerang A46-103 1AD SA NON. STANDARD. AIRCRAFT. 25653

RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT & MARINE CRAFT. R.A.A.F. Form E/E.88. (June, 1938)

Type Boomerang No. A46-103 Chassis / Airframe / Engine Fitted Wasp S3C4G No.

Order No.

Received from C.A.C. Date Received 26.6.43.

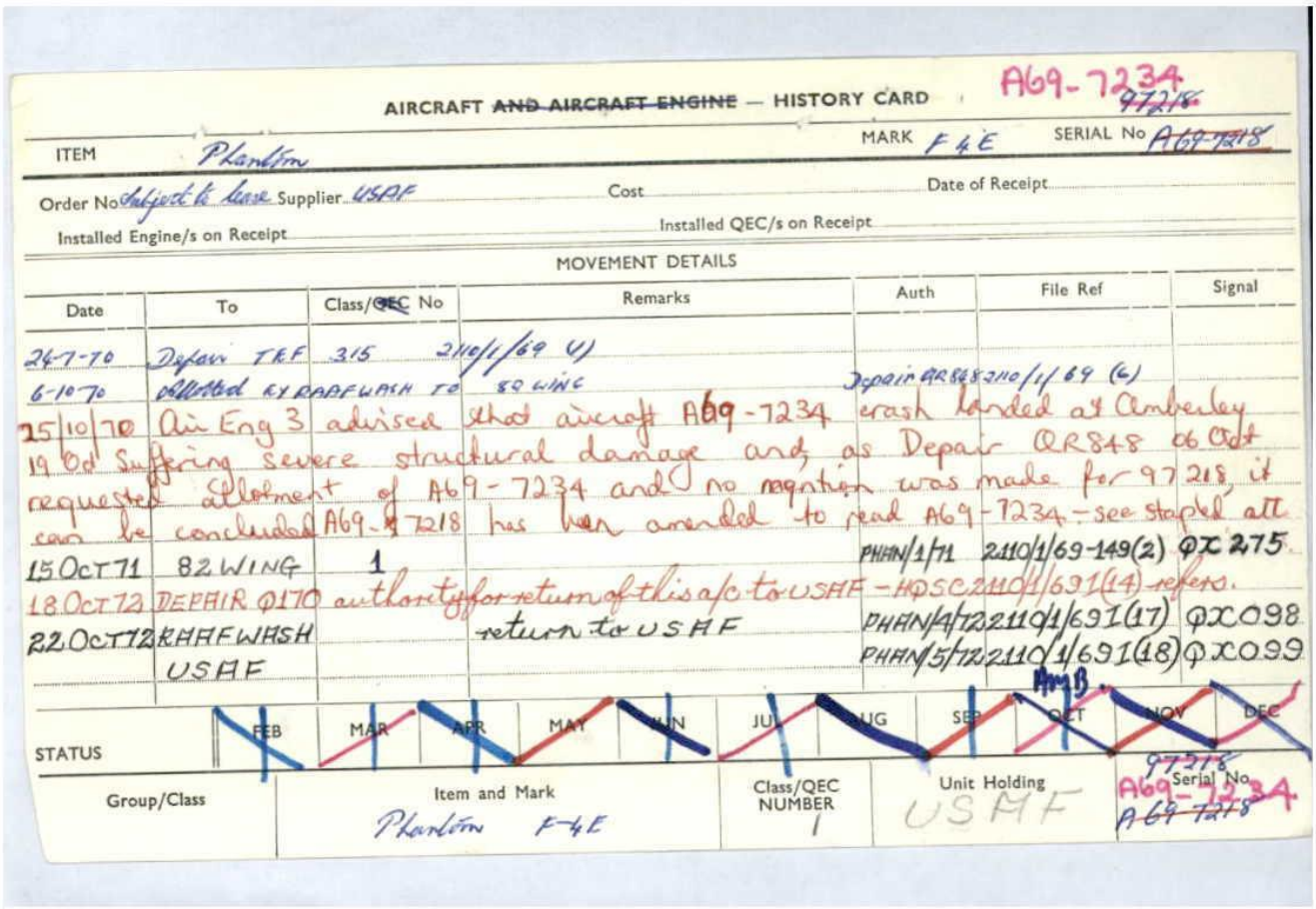
HISTORY (MOVEMENTS, CASUALTIES, Etc.)

Date.	Details.	Authority.	Date.	Details.	Authority.
17.4.46	Storage under Cat. E in open completed	1Q1267.	13.10.47	Mainplanes removed and issued C.S.I.R on T.I.R.S.1492	1AD Q1078
22.3.46	A/c to be stored under Cat E	AS143454 22/3		10/10/47 ~~Remainder of A/C to be held in situ pending further advice~~	encl 1AD 9/86/62
1.10.46	To be stored Cat E	AS 174436 1/10	2.10.47	Free issue of fuselage and engine cancelled	QC1313 1/10/47
	offered DDSDC for disposal	an/1606		Residue to remain in situ pending further advice	9/86/62
13/5/46	auth by DDSDC for W/O	NO2 15/5/46	2.4.48	Allot SASR ex 1AD	QC1800 2/4
6/8/47	approved for free issue to C.S.I.R.	AS135473 6/8/47	12.10.48	allot. QC1800 2/4 cancelled	QC1428 9/2/586 12/10/48
	1AD To advise imm	9/86/62			

Boomerang A46-103 1AD Store NON STANDARD. AIRCRAFT. O Cat E

End Notes: The many faces of F-4E-43-MC A69-7234 and the one that got away!

[182] The RAAF Aircraft History Card for originally A69-7218(69-7218) : 24/07/70, later changed to reflect its replacement Aircraft, "A69-7234" aka 69-7234. Factory Collection was on the 24/09/70 for 69-7218 when accident happened. Substitute aircraft accepted 06/10/70



AIRCRAFT ~~AND AIRCRAFT ENGINE~~ — HISTORY CARD A69-7234 97218

ITEM Phantom MARK F4E SERIAL No A69-7218

Order No Subject to lease Supplier USAF Cost Date of Receipt

Installed Engine/s on Receipt Installed QEC/s on Receipt

MOVEMENT DETAILS

Date	To	Class/~~QEC~~ No	Remarks	Auth	File Ref	Signal
24-7-70	Depair TRF	315	2110/1/69 (4)			
6-10-70	allotted ex RAAFWASH to	82 WING		Depair QR848 2110/1/69 (4)		
25/10/70	Air Eng 3	advised that aircraft A69-7234		crash landed at Amberley		
19 Oct	Suffering severe	structural damage and, as Depair QR848 06 Oct				
requested	allotment of	A69-7234 and no mention was made for 97218, it				
can be concluded	A69-97218	has been amended to read A69-7234 - see stapled att				
15 OCT 71	82 WING	1		PHAN/1/71 2110/1/69-149(2) QX275		
18 OCT 72	DEPAIR QI70	authority for return of this a/c to USAF		HQSC2110/1/691(14) refers.		
22 OCT 72	RAAFWASH	return to USAF		PHAN/4/72 2110/1/691(17) QX098		
	USAF			PHAN/5/72 2110/1/691(18) QX099		

Amdt B

STATUS FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Group/Class	Item and Mark	Class/QEC NUMBER	Unit Holding	Serial No
	Phantom F4E	1	USAF	97218 A69-7234 A69-7218

[183]

Chris Gregory Patterakis was born July 23, 1935, in Van Houten, N.M., a coal-mining town that no longer exists. After briefly residing in Utah, his family settled in Modesto, Calif. Both his parents were Greek immigrants, and he spoke Greek at home. He had no particular interest in flying in his youth, devoting his time to football, basketball and music. He was a "natural musician" who sang and played drums and was self-taught on guitar and standup bass, said boyhood friend Art Garcia.

After joining the Air Force at 18, he was a military police officer and spent two years playing bass in a military band in Germany. In four years, he never once saw the interior of an airplane. He was back in Modesto, his tour of duty completed, when he caught a ride on a friend's private plane and was instantly taken with the idea of flight. He enlisted in the Air National Guard, went to flight school and became a pilot in the California National Guard. He transferred to the Air Force in 1964 and within 18 months won a coveted spot with the Thunderbirds, flying the left wing position for a two-year stint.

In 1968, he went to Vietnam as an F-4 fighter pilot and flew 315 combat missions, including 60 over North Vietnam. For the next six years, he was a flight instructor and evaluator before returning to the Thunderbirds as the precision team's commander and leader in 1975.
In the nation's bicentennial year, Gore said, the Thunderbirds put on 102 air shows in 86 locations, flying T-38A Talons. When he retired from the Air Force in 1978, his honours included six awards of the Distinguished Flying Cross, 21 Air Medals and two Air Force Commendation Medals. He later graduated from Golden Gate University in California.

The year he retired, Maj. Patterakis ran for Congress, losing as a Republican candidate in California to Tony Coelho (D). He then worked as a charter pilot in California and Nevada and held an executive position with Northrop Aircraft. At 55, he became a pilot with United Airlines, where he worked until 2001.

He passed away on the 9th May 2006, aged 70yrs. Best summary: "You would just follow him to hell and back," said Bob Gore, a former Air Force colleague

[184] Excerpt from http://www.raafaact.org.au/topics/F-4E_Jan07.html

[185] F-4E 69-7254 served as the YF-4G prototype, although it was originally known as the F-4E Advanced Wild Weasel. This F-4G was fitted with leading-edge manoeuvring slats. The M61A1 cannon and ammunition drum were removed and replaced by an under-nose fairing that housed forward- and side-looking radar antenna as well as line replacement units for the AN/APR-38 radar warning and attack system. This system can be reprogrammed at squadron level, and can identify known enemy air-defense radar systems and display their locations in a predetermined order of priority. The under-nose fairing has a ram inlet that admits cooling air to the interior, which helps to cool the avionics systems inside the nose.

*Initial batch of 115 F-4Gs modified at the Ogden Air Logistics Center and initially fitted with the AN/APR-38 69-0236/0243, 69-0245/0248, 69-0250/0255, 69-0257/0259, 69-0261, 69-0263, 69-0265, 69-0267, 69-0269/0275, 69-0277, 69-0279/0281, 69-0283/0286, 69-0292/0293, 69-0297, 69-0304, 69-0306, 69-7201/7202, 69-7204/7220, 69-7223, 69-7228, 69-7231/7236, 69-7251, 69-7253/7254, 69-7256/7260, 69-7262/7263, 69-7270, 69-7272, 69-7286/7291, 69-7293, 69-7295, 69-7298, 69-7300/7303, 79-7546, 69-7550, 69-7556, 69-7558, 69-7560/7561, 69-7566, 69-7571/7572, 69-7574, 69-7579/7584, and 69-7586/7588.

• Second batch of 18 F-4Gs modified at the Ogden Air Logistics Center and fitted from the outset with the AN/APR-47: 69-0244, 69-0249, 69-0260, 69-0264, 69-0278, 69-0290, 69-0298, 69-0303, 69-0305, 69-0307, 69-7252, 69-7261, 69-7267, 69-7268, 69-7274, 69-7297, 69-7551, and 69-7557.

[186] *A total of 9 of the ex RAAF F-4E's that were converted to F-4G standard saw service in the first Gulf War(69-0304 "04", 69-7201 "1", 69-7202 "2", 69-7207 "7", 69-7209 "9", 69-7210 "10", 69-7212 "12", 69-7216 "16" and 69-7234 "34").*