ADF Serials Telegraph News

News for those interested in Australian Military Aircraft History and Serials

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News Briefs

- **12 November 2017:** The RAAF's eighth C-27J Spartan A34-008 arrived at RIC 12 Nov 2017. Status of deliveries over the period is given below.

A34-008, just delivered to 35SQN Richmond, makes its first visit to Canberra on 24th November

RAAF Serial	US FMS Reg	msn	Delivery Details
A34-008	12-27055	AUS08 (prob 4187)	Noted flying at Turin Italy as I-PTFN, then seen at Waco on 13 SEP 17. Delivered to 35QN at Richmond on 12 NOV 17.
A34-009	12-27056	AUS09 (prob 4188)	Left Turin on 24 JUL 2017 bound for Keflavik and onwards to Waco, test registration is I-EASF. Seen at Waco on 13 SEP 17. Anticipate delivery to Richmond early 2018.
A34-010	12-27057	AUS10 (prob 4189)	First flight on 29 AUG 2017, left Turin for Keflavik 3 OCT 17, and onwards to Waco. Anticipate delivery to Richmond early 2018.

- **16th November 2017:** AP-3C A9-751 flown from RAAF Edinburgh to RAAF Museum at Point Cook for display. Let us hope it will eventually end up under cover. Followed on **5th December** by Squirrel N22-001 from HMAS Albatross. Let us hope the RAAFM can adequately store these aircraft.
- **17th November 21017:** 6SQN at Amberley celebrated its 100th Anniversary, having formed as a training squadron in England in 2017. An EA-18G Growler, A46-306, was specially prepared in anniversary colours.

- **14th November 2107:** Our fifth P-8A Poseidon, A47-005 (msn 63179, N832DS), arrived at Edinburgh for 11SQN. Aircraft six, A47-006 (msn 63182, N849S) is flying at the factory in the US, expected delivery at the beginning of 2018. Initial Operational Capability (IOC) is due to occur in January 2018. An initial 12 P-8As are being delivered, under the $5.4 billion AIR7000 Phase 2B project, by March 2020, which will represent FOC. With the AP-3C due to be retired in 2019, the White Paper forecasts an additional three will be acquired in the second half of the next decade. On 12th December 2017 the maintenance trainer (also strangely carried the serial A47-001!) was delivered by An-124 to Adelaide.

- **RAAF P-8A Poseidon Aircraft: Update: A47-001** was **a Boeing 737-8FV (P-8A)** an**d A47-002** and thereon delivered are listed as **Boeing 737-800A (P-8A**). This is not known as a designation per US Navy or Boeing. However Bu No 169010 and 169011 are the only **USN Boeing 737-800A (P-8A) designated versions** delivered in 2016 (Ex N957DS). Did the RAAF get an early delivery through swapping a US Navy line aircraft as A47-001?

Meanwhile also on the production line: the UK's Poseidon's…

The UK announced its intention to order nine P-8 aircraft (ZP801 to ZP809) in November 2015, as part of the 2015 Strategic Defence and Security Review. The US State Department approved a proposed Foreign Military Sale to the UK for up to nine P-8 aircraft and associated support, at an estimated cost of $3.2 billion in March 2016, and the UK Government committed to the purchase in July 2016.

The British aircraft will be manufactured as part of three larger production lots, and the first two British P-8s are expected to arrive at RAF Lossiemouth in Scotland in 2019. The next three aircraft will be delivered in 2020 and the final four will follow in 2021. The nine P-8A Poseidon aircraft will be operated by Nos 120 and 201 Squadrons from RAF Lossiemouth, 120 Squadron forming from April 2018, with 201 Squadron following in 2021.

- **17th November 2017:** Royal Australian Navy's future replenishment ships will be named HMAS 'Supply' and 'Stalwart'.
- **24th November 2017:** The 30th anniversary of the delivery of the 1st PC-9/A to East Sale.
- **29th November 2017:** Ten years after taking delivery of its first Airbus Helicopters MRH-90 helicopters, the Australian Army is finally preparing to use them in the most demanding role. Because of poor performance issues, 6th Aviation Regiment that supports operations by the country's Special Forces was obliged to retain its Sikorsky S-70 Black Hawks. But now, it is planning to introduce the type in 2019. One of the main issues was the impediment of the existing gun mount. A new gun mount has been designed that can mount the Dillon M134D 7.62mm mini-gun as well as the General Purpose Machine Gun (GPMG), while allowing Special Forces operators to conduct missions using the new fast roping, rappelling and extraction system (FRRES) at the same time. The Army is now enjoying increased flying hours and reduced maintenance hours on the type in 2017.

- **December 2017:** PC-21 A54-015 HB-HWO prepared for ground running tests 29th November 2017

A54-015

RAAF Serial	Ferry Reg	msn	Delivery Details
A54-011	HB-HWK	244	13 SEP 2017 ground running, 10 OCT fitted with pair of underwing smoke generators, anticipates delivery to Aust DEC 17.
A54-012	HB-HWL	245	4 OCT 2017 noted ground running, 9 OCT first flight, anticipate delivery to Aust DEC 17.
A54-013	HB-HWM	246	
A54-014	HB-HWN	247	
A54-015	HB-HWO	248	A54-015 HB-HWO prepared for ground running tests 29 NOV 17
A54-016	HB-HWP	249	

- **1st December 2017:** The S-70B-2 Seahawk and AS350BA Squirrel helicopters have been formally retired from active Royal Australian Navy (RAN) service in a ceremony at HMAS Albatross. The S-70B-2 Seahawk Service Record reflected a nil attrition rate.

- **13th December 2017:** Defence Minister Payne announced the Government has agreed to the sale of 18 RAAF F/A-18 A/B Hornets to the Government of Canada. The offer follows an expression of interest from the Canadian Government received in September. The sale of the aircraft and associated spares remains subject to final negotiations and US export approvals. Defence plans to withdraw its fleet of F/A-18A/B Hornets from service by 2022, which will be progressively replaced by the F-35A Joint Strike Fighter. "Australia greatly values our long-standing and broad bilateral defence relationship with Canada, and this decision is another example of our close and strong partnership," Minister Payne said. Transfer of the first two aircraft is expected to occur from the first half of 2019, in line with the current plan to transition to the JSF - Australia's first two JSFs are expected to arrive in Australia at the end of 2018.

A35-003 3SQN's first F-35A at Dallas Fort Worth airport in Texas, DEC 2017

And also airborne from the Fort Worth factory, A35-004 in 2(F) OCU markings

- **Redress: 27th June 2017**: **RAAF's G-550AISREW; where are they???** The Government of Australia requested the possible sale of up to five (5) Gulfstream G-550 aircraft modified to integrate Airborne Intelligence, Surveillance, Reconnaissance, and Electronic Warfare (AISREW) mission systems, Global Positioning System (GPS) capability, secure communications, aircraft defensive systems; spares, including whole life costs of airborne and ground segments; aircraft modification and integration; ground systems for data processing and crew training; ground support equipment; publications and technical data; U.S. Government and general

contractor engineering, technical and logistics support services; flight test and certification; and other related elements of logistical and program support. The total estimated program cost is $1.3 billion.

To date, it is not known if the first two Green Airframes have been built as yet and could any of the following Gulfstream GV-SP (G550) in production now be the airframes? With C/N 5555 to 5560 built in 2017?? (Update: C/N 5557 went to Spain 27/10/17. Ed)

Is there a difference of numbers? It's either two or five. In late 2015 the RAAF ordered two Gulfstream G550 aircraft to be delivered by 30 November 2017. The work on the aircraft, to be done at L-3's Greenville, Texas, site under a fixed-price contract, should have been completed by 30th November, 2017, the U.S. Defence Department stated. Refer: Two Tranches to be ordered ***https://www.youtube.com/watch?v=9LZYBTLVvBM So where are they?***

- **Redress 20th October 2017:** However, its replacement, the MH-60R, has suffered its first incident when on the 20th October 2017, **N48-020 "920"** '*Gold Digger*' (Bu No 168833) whilst on board ((FFH152)) HMAS Warramunga (Pictured on leaving Sydney: RAN), was damaged when it broke free of its lashings while on route to the Middle East when transiting the Great Australian Bight. She was previously based on (FFH155) HMAS Ballarat earlier in 2017.

Curtiss Corner: **P-40E-1-CU A29-120 Update**

Gordon Birkett @2017

Unidentified Airman Pilot is no other then Sqn Ldr Peter Turnbull, which dates this shot pre-27th August 1942, location, is therefore Australia or Milne Bay. Special thanks to "Oz Hawk" aka Peter May for his help in identifying this pilot. Editor

RAAF AIRCRAFT MARKINGS SINCE 1950

SQUADRON MARKINGS –
PART 6 – DROPPING THE FIGLEAF (1)

WWII CAMOUFLAGED AIRCRAFT
INTO 1950's SILVER

John Bennett 2018

Continuing this series of RAAF silver aircraft from the 1950s we will now look at some of the WWII aircraft that dispensed with their camouflage over 1944-45, and carried an aluminium finish through the 1950s. Part 5 in the series[1] covered the ubiquitous and transport stalwart the C-47 Dakota, but other WWII types – the Mustang, Mosquito and Catalina – were also stripped of camouflage (and this will be followed up in our next instalment). This stripping of camouflage determined the colours of RAAF aircraft through the 1950s and early 1960s – practically all aircraft carried an aluminium or natural metal finish (NMF), colloquially referred to as 'silver'.

The closing two years of WWII saw directives for almost all RAAF camouflaged aircraft to be stripped back to bare metal, or treated with aluminium paints and dopes. This occurred from early 1944, so that by the end of the Pacific War in August 1945, there were less operational front-line aircraft left in their wartime camouflage.

In OCT 1943, the USAAF Commanding General ('Hap' Arnold) had authorised the elimination of aircraft camouflage, and this was formalised in *Military Requirements Policy No.15*, of 16 NOV 1943, which specified the "removal of camouflage paint from all AAF aircraft", reiterated the next month by USAAF Technical Order 07-1-1.[2] However, even though Lend-Lease aircraft were now to be delivered in bare metal, the RAAF HQ Directorate of Technical Services (DTS) policy remained that all arriving aircraft were still required to be camouflaged before proceeding on operations.[3] But this nugatory directive was almost immediately repealed, so this is our study into *camouflage to silver*.[4]

The start of silver – US Lend-Lease deliveries 1944
B-24L Liberator A72-109 was delivered NOV 1944, flew with 7OTU in 1945, then stored 1946

Camouflage to Silver

The following chronology of marking policy is the RAAF's evolution from camouflage to silver over 1944-45

- **JAN 1944** – removal of camouflage from Kingfishers.[5]
- **FEB 1944** – Liberators were not to be camouflaged;[6] trial Lodestar to be stripped of camouflage.[7]

- **APR 1944** – RAAF HQ DTS approval to 82SQN for camouflage removed from Kittyhawks at 82 SQN, but white identification markings to be retained, in anticipation of DTS SIG/34.[8] A week later, DTS approved the removal of camouflage from 548SQN and 549SQN Spitfires, again in anticipation of SIG/34.[9]

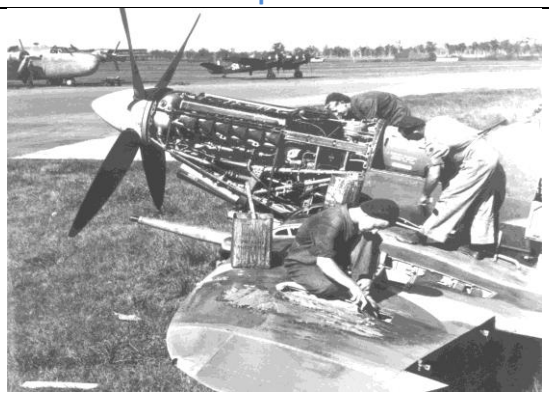
82SQN P-40N Kittyhawk A29-625 FA-A at Townsville in JUL 1944 with removal of camouflage

- **MAY 1944** – A major policy revision was **DTS Special Instruction General No.34 (SIG/34)** stated "fighters, fighter-bombers, and bombers to be uncamouflaged and fabric surfaces finished in Aluminium dope". Mostly other aircraft were to be one colour all-over: such as 'green' for attack aircraft (including medium bombers used for strafing and dive-bombers), Tac/R (e.g. Beaufighter, Auster AOP), 'blue' for PR (i.e. Mosquito), 'night' for night reconnaissance (i.e. Catalina), or 'yellow' for trainers (e.g. Wirraway and Tiger Moth).[10]

1944-45 – PAINT STRIPPING

Both 548 and 549 SQNs at Strathpine stripped the camouflage from their Spitfires over early MAY 1944.[11] Continual supplies of steel wool and paint stripper were required. *548SQN Unit History* 18 MAY 1944: "The hands of the crews who had been removing the paint were in such bad state that they were not able to do much work on the stripping today." The stripping was completed by 20 MAY. [12]

Spitfire VIII A58-379 ZF-Z of 549SQN Darwin, NOV 1944



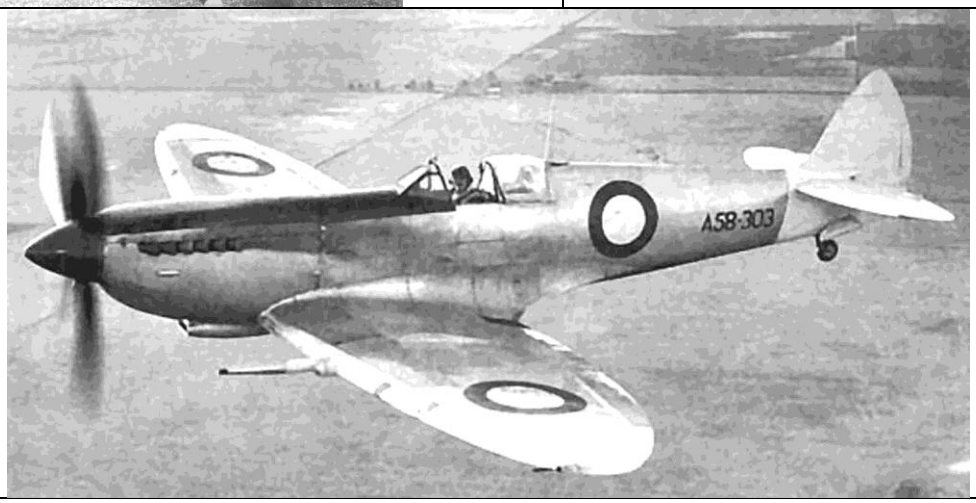
Stripping camouflage in JUL 1945 off Spitfire VIII, 3AD Amberley. Paint stripping was normally done by applying K3/331 'Paint and Varnish Remover', waiting for this to lift the paint, and then scraping. Perspex was crazed by this compound, and it was recommended to remove the canopy from a Spitfire before application of the paint remover. The paint on the canopy then had to be laboriously removed by sanding and scraping.

- **MAY 1944 -** SIG/34 was the precursor to the new RAAF HQ **Technical Order, AGI Part 3, Section (c), Instruction 1**, of 26 MAY 1944, which specified the following aircraft were to be *uncamouflaged*: Kittyhawk, Spitfire, Mustang, CA-15, Mitchell, Kingfisher, Lancaster and Liberator.[13]

1944 – 1APU FIGHTERS STRIPPED TO BARE METAL

1 Aircraft Performance Unit (1APU) flew from Point Cook and Laverton and was the forerunner of ARDU. In this NOV 1944 image of a G-suit trial is bare metal **Spitfire VIII A58-303**, with **P-40N Kittyhawk A29-650** in the background. Both aircraft in 1944 had been stripped to bare metal, but still retain the white fighter identification markings.

Some white-tailed Spitfires (like those at CGS Cressy and 1APU, varying from other units) did not have any blue tail flash. Kittyhawks did – marked purely as a blue bar abutting the rudder post, on the white background.



- **OCT 1944 –** In response to a query to HQ RAAF Command earlier in the month, RAAF HQ advised that non-camouflaged single-seat fighters no longer required white identification markings (i.e. wings and empennage).[14] This was then formalised by **DTS SIG/49** in DEC 1944.[15]
- **DEC 1944** – DC-2 approval to be un-camouflaged.[16]

B-25J Mitchell A47-44, 3AD, over Brisbane 1945 – the aluminium finish typified Lend-Lease deliveries 1944-45

- **FEB 1945 –** Recommendation to DCAS by de Havilland that the Mosquito in tropical areas should be covered in silver dope.[17] This was then approved by RAAF HQ DTS the following month,[18] formalised as **DTS SIG/52/36** the next week on 9 MAR 1945,[19] and implemented immediately on 1SQN Mosquito FB.VI aircraft.
- **MAR 1945 –** All operators of transport aircraft requested through RAAF HQ for the removal of camouflage for improved performance, and as Philippine-based USAAF transports were now uncamouflaged.[20]
- **APR 1945 –** RAAF Command refused this request from HQ RAAF Directorate Technical Operational Requirements (DTOR), stating that policy stated that transport aircraft be treated with one coat of *Foliage Green* camouflage.[21] Possibly this was a result of the ongoing feud that existed between RAAF Command (Brisbane) and RAAF HQ (Melbourne).
- **MAY 1945 –** Following a request from QANTAS regarding delays in stripping and camouflaging Sunderlands, the following month RAAF HQ approved for Sunderlands to be left uncamouflaged at major servicing.[22]
- **JUN 1945 –** A request from HQ 5 Maintenance Group (5MG) to RAAF HQ for removal of camouflage from Hudsons and remaining camouflaged Lodestars was not approved.[23]

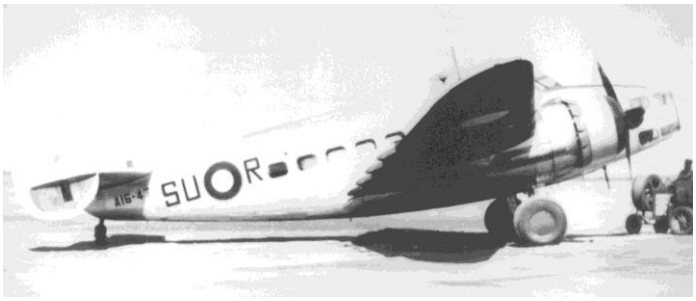
A67-4, one of the earlier stripped C-60A Lodestars in 1945 – fuel leak problems led to more Hudson transport use

1945 – HUDSONS STRIPPED TO SILVER TRANPORTS

SURVEY FLIGHT

A16-130 SU-H 1945 Survey Flight

As they were withdrawn from front-line service, various Hudsons were converted to transport use with the Survey Flight (later Survey Unit) and for the Comms Units, often as VIP aircraft with comfortable seating and sound-proofing installed.



A16-47 SU-R of Survey Unit 1946-47

A16-112 SU-P 1946 Survey Flight

VIP TRANSPORT

A16-116 4CU (Gen Blamey) 1945, replaced by A67-10;

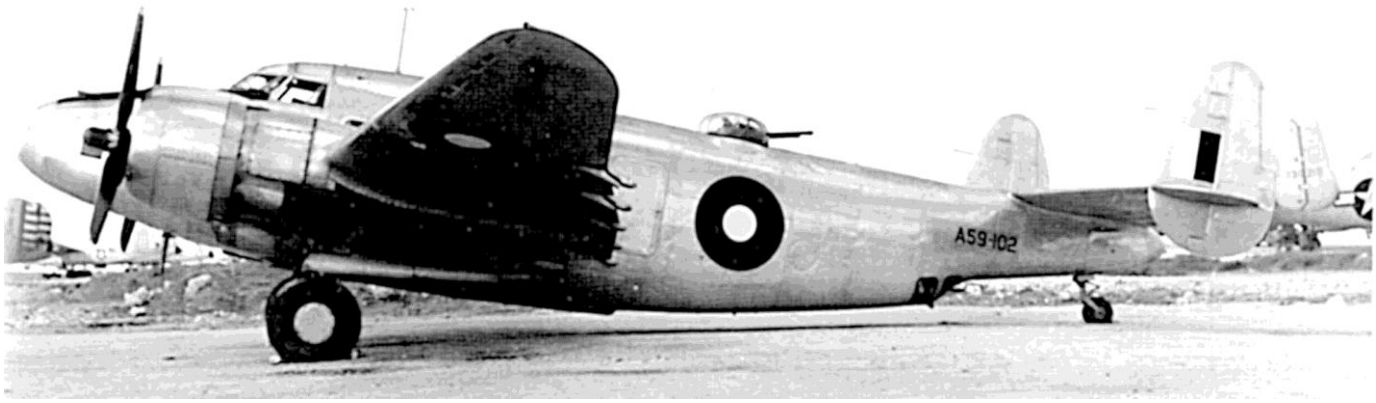
A16-189 6CU (AOC NWA) with AIRCDRE pennant 1944-45

A16-120 1CU (CAS Air Marshal Jones) AUG 1944-SEP 1945

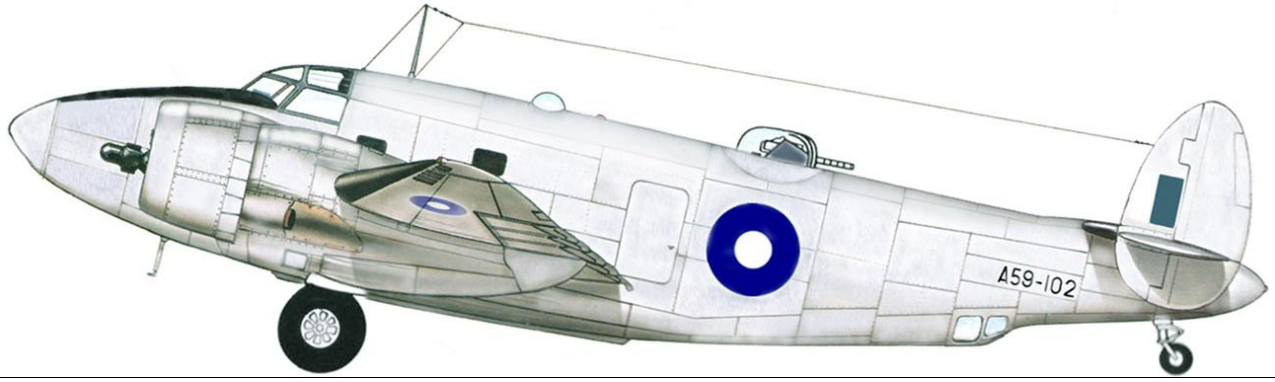
Many of these examples are from David Vincent's magnificent volumes *The RAAF Hudson Story*.[24]

1945 – BOMBERS STRIPPED TO SILVER TRANPORTS

VENTURA



PV-1 Ventura A59-102 was converted to a transport in NOV 1944 (ADAT registration VH-RGW) and became the VIP transport with 4CU for AOC RAAF Command (AVM Bostock) over late 1944 into 1945. A59-102 replaced the earlier Hudson A16-55 of 4CU (in use from 1943 as VM-B), with VIP seating removed for fitting to the Ventura.[25] Then in SEP 1945 it went to 2AD for major mods, and returned to 4CU in NOV 1945 without guns and the turret removed.



BEAUFORT

A9-250 pristine in bare aluminium, 3:5 Pacific roundel

A9-93 bare metal, 5OTU Williamtown c1945

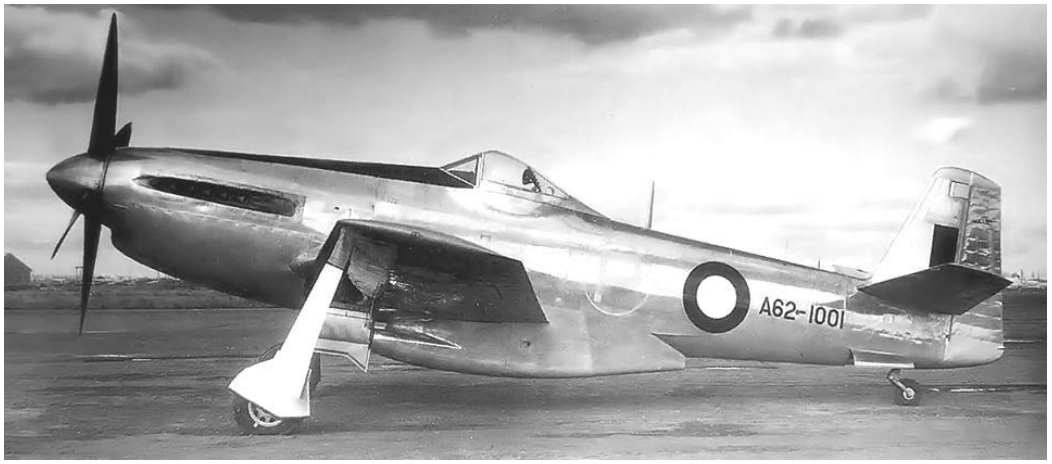
A9-201 prototype Beaufreighter was re-serialled A9-743 in 1945, officially a Beaufort Mk.IX

1945-46 – BRIGHT SILVER OFF AUSTRALIAN PRODUCTION LINES

MUSTANGS

4 JUN 1945 – handover of the first production CA-17 A68-1 at CAC, with imported pattern P-51D A68-1001 which had arrived in 1944. All 200 CAC-produced Mustangs were delivered in natural metal, and wore this style of 'Pacific' 3:5 National Markings until changed to 1:2:3 'Type-D' with the first on A68-109.

CAC CA-15



12 FEB 1946 – taxying trials commence for the Australian-designed CA-15 at CAC Fishermen's Bend.

GAF LINCOLN

12 MAR 1946 – RAAF's first Lincoln B.30 A73-1 flew from the DAP factory at Fishermen's Bend – here is the 18th example A73-18 with Mustang Mk.21 A68-96 at Amberley, both in Pacific roundels SEP 1947.

The First Years of Peace

- **AUG 1945 –** With the end of hostilities, RAAF HQ DTS approved the removal of camouflage from "all transport aircraft".[26]
- **OCT 1945 –** Request from HQ 4MG for the removal of camouflage from Catalina, approved the following week by RAAF HQ DTS. [27]
- **NOV 1945 –** RAAF HQ DTS released a further instruction **DTS SIG/71** for all aircraft expected to remain in service postwar were to have camouflage removed.[28] This Instruction went on the specify that 81 Wing Mustangs (i.e. under the command of British Commonwealth Occupation Force Air Forces, BCAIR) in Japan were to be treated in accordance with local direction (which in effect saw the early introduction of red-white-blue National Markings).
- **1946. Aircraft General Instruction (AGI) Pt.3 Sect (C) Instruction 1 (Issue No.2) of 3 OCT 1946** [29] which reduced RAAF colour policy to just two schemes:
    - "Appendix A" *uncamouflaged* in natural metal/alumunium, and
    - "Appendix B" for training aircraft in *Yellow*.

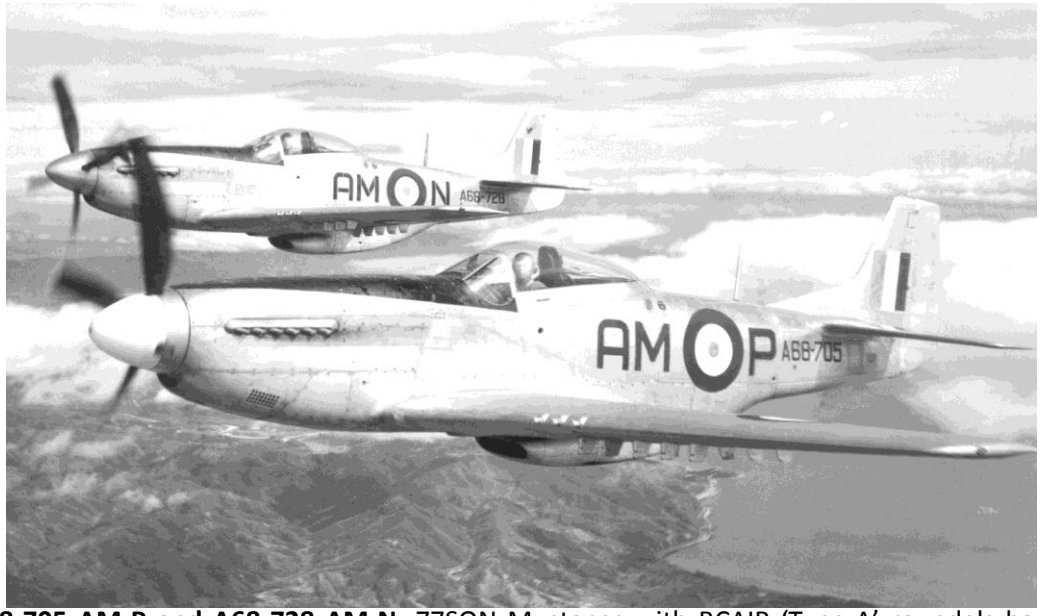
  RAAF HQ DTS had considered the retention of squadron codes in NOV 1945, and determined that these markings would remain.[30] By MAR 1946, DTS was discussing the pre-war red-white-blue National Markings, and *had been advised by RAF Liaison in Melbourne that the RAF had reverted to red-white-blue roundels*.[31] This may have been somewhat pre-emptive, as only BCAIR in Japan had re-adopted red, and while this was still being discussed in UK in 1946, RAF policy was not formulated until 1947. Also being discussed by RAAF HQ was the deletion of the VH-radio callsigns, and the use of underside serial numbers for training aircraft.

A busy scene at Laverton in 1946 – silver aircraft of 1APU and 1AD and the camouflaged 'pattern' A68-1001

- **1947.** Jet aircraft were coming into the RAAF: a UK-provided Meteor arrived in 1946, and Vampire single-seaters arrived over 1947-1949, Canberras would be received from 1951, as 77SQN in Japan received its Meteors for the Korean conflict. Initially these had been delivered in a variety of late wartime RAF colours, but by 1948 were standardised as aluminium, now known as *High Speed Silver*.[32] Some changes during 1947 were:
    - **DTS SIG/88 in MAY 1947** formalised the removal of all VH-series radio callsign markings;[33]
    - within months this was countermanded by **DTS SIG/90 in JUL 1947** to remove the "VH" prefix only, and leave the last three letters;[34] and
    - **DTS SIG/92 in AUG 1947** which deleted the requirements for squadron codes[35] (e.g. at Williamtown 'GA' for 75SQN, and 'HU' for 78SQN; but this did not apply to 81WG within the BCAIR Command).

1946-47 – BCAIR 'TYPE-A' MARKINGS AND RAF AMO A.413/47

81 WING MUSTANGS



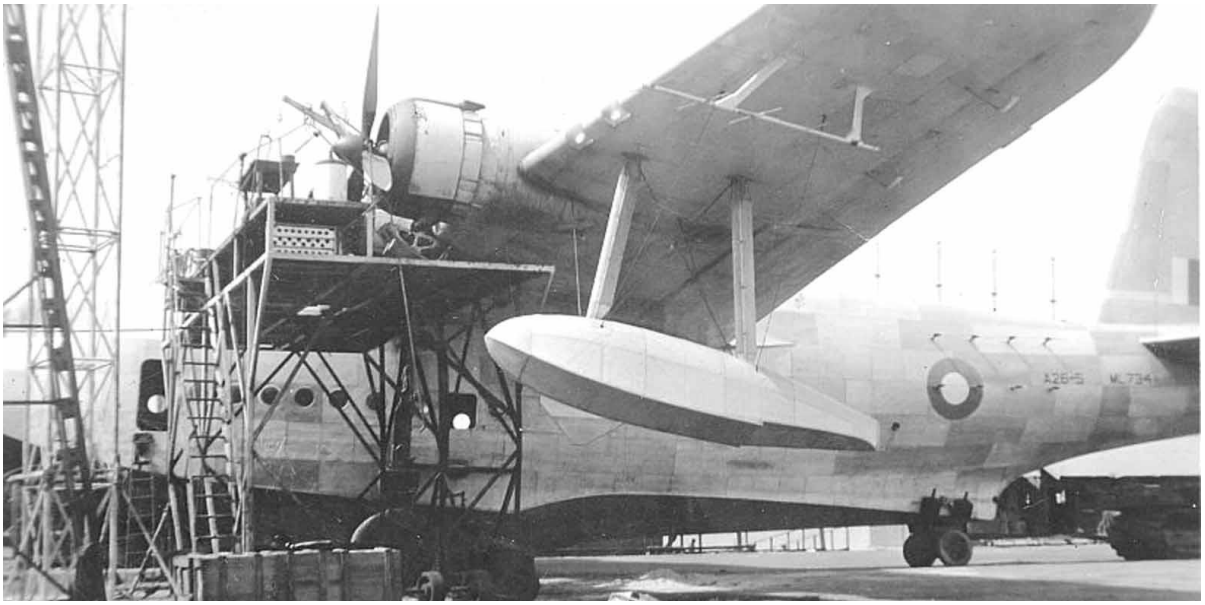
1946-48 – A68-705 AM-P and A68-728 AM-N, 77SQN Mustangs with BCAIR 'Type-A' roundels having replaced 'Pacific' roundels (77SQN codes are still worn). In 1946, BCAIR had already reverted to the pre-war 'Type-A' 1:3:5 roundel,[36] probably in response to discussions in the UK Air Ministry regarding the return of the 'pre-war' roundel. But in MAY 1947 the RAF 'Type-D' 1:2:3 roundel was promulgated by **Air Maintenance Order AMO A.413/47** – while this referred to the 'pre-war' roundel, with no diagrams attached, it caused confusion. While some RAF home commands queried what was really meant, it became apparent this was in fact to be a *new* roundel, not the 'pre-war' roundel![37] BCAIR roundels were retained by 77SQN until Meteors arrived in 1951 with 'Type-D' roundels.

WIRRAWAYS

1950 – A20-745 77SQN at USAF base Itazuke mid-1950, with BCAIR 'Type-A' roundels. To replace Harvard flying, 81WG received three Wirraways in MAR 1948, erected by JUN 1948,[38] all three were transferred from 77SQN to 91WG in NOV 1950: A20-750 crashed in JUL 1951; A20-745 in JUN 1952; A20-740 continued to fly until MAR 1956.

DAKOTAS

1950 – A65-121 77SQN with BCAIR markings, in NOV 1950 the Dakotas were transferred from 77SQN to 30 Comms Unit (30 CU) as part of 91 (Composite) Wing; later to become 30 Transport Unit, then 36SQN.



Silver Sunderland Mk.III A26-5 stripped of camouflage in 1947

A26-5 still carries its RAF serial ML374 from delivery in 1944 – it was disposed of in APR 1947 and here is being converted for civilian use at Rose Bay

So over 1946-47 BCAIR's adoption of the 'pre-war' red-white-blue roundel (as the 'Type-A' 1:3:5) had actually been correct[39] – while what had really been intended by the Air Ministry was a new 'Type-D' 1:2:3, and in 'bright' colours.[40] This was what the RAAF implemented in Australia from JAN 1948, but RAAF aircraft within BCAIR were subject to the Instructions of that local command.[41]

C-47B Dakota A65-119 'RGG', with the 'VH' prefix deleted in response to DTS SIG/90 of JUL 1947

- **1948.** The really significant change for the RAAF in Australia was the re-introduction of red to the National Markings, i.e. the new design 1:2:3 'Type-D' roundel. The Type-D national markings were implemented for all six positions, mandated by the **DTS SIG/96 of 14 JAN 1948.** The colours of the National Markings were not the dull red and blue of the war years, but were marked in a *brighter gloss blue and red.*[42] In addition, **DTS SIG/102 in JUL 1948** finally formalised the removal of all VH-series callsign markings.[43] Below is a truly 'naked' C-47B, a highly-polished Dakota A65-85, the Governor General's VIP aircraft, which had his royal standard added in SEP 1947.[44] The 'Type-D' markings were bright colours; the BCAIR 'Type-A' retained wartime dull blue.

1948 – RAAF HQ DTS SIG/96 RED-WHITE-BLUE 'TYPE-D' MARKINGS

DTS SIG/96 of 14 JAN 1948 was the really big change for the RAAF in Australia with the re-introduction of red to the National Markings, which were a new design 1:2:3 'Type-D' roundel, introduced to the RAF **in MAY 1947 by AMO A.413/47**. SIG/96 introduced by 1:2:3 'Type-D' national markings in all positions, brightening the dull wartime colours by a *brighter gloss blue and red*.[45]

A65-85 bare C-47B in bright 'Type-D' markings of the Governor-General's Flight, with G-G Standard added in 1951

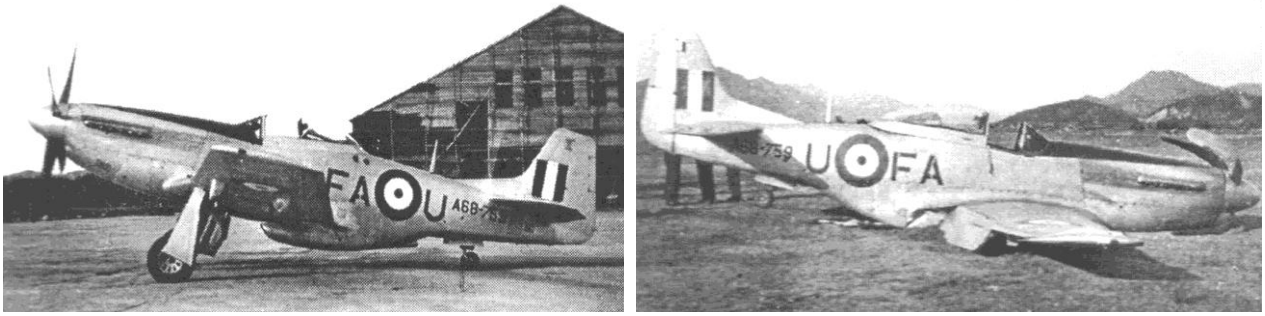
1951 – Mosquito Mk.41 A52-326 at Laverton, 'Type-D' roundels, 87SQN red-white-blue spinners.

1953 – A20-679 of 1 Advanced Flying Training School (1AFTS) at Point Cook in overall *Aluminium* which replaced overall *Training Yellow* in 1948 (with DTS SIG/96), and with yellow training bands and 'Type-D' roundels, which were retained on the fuselage until the 1956 introduction of the leaping kangaroo roundel.

Roundel Confusion 1946-1948. What follows is a rather long-winded referenced explanation of the errors and inconsistencies of introducing the red/white/blue National Markings to the RAF, BCAIR and RAAF (*if it is too detailed, skip it!*).

While the RAAF DTS SIG/96 Instruction had introduced red the RAAF National Markings, as discussed this was not as simple as it might seem. For 81WG in Japan – as part of BCAIR – the blue-white roundels were changed in anticipation of a change to RAF policy to red-white-blue National Markings (from MAY 1947), and was interpreted as the 'pre-war' 1:3:5 proportions. Bearing in mind that any policy change must be clear-cut by requirements being espoused with all details of implementation, but there was a problem – and it was not purely a lack of red paint in the RAF stores. This contradictory policy caused confusion throughout the RAF...

- The UK Air Ministry policy **Air Maintenance Order (AMO) A.413/47 dated 15 MAY 1947** stated that the RAF would revert to the 'pre-war' roundel on all aircraft.[46] However, this was inexplicit, as there had been different types of 'pre-war' roundels with different dimensions incorporating the red centre, and there was no accompanying illustration of the roundel in the AMO. Fighter Command correctly queried the Air Ministry on the dimensions provided by the AMO, stating that was ***not*** the 'pre-war' roundel, as the pre-war roundel's red centre was only half that quoted in the AMO. Basically, what had been intended was a 1:2:3 roundel (later described as a 'Type-D'), but the main pre-war roundel had a small red circle (1:3:5, later defined 'Type-A'). This AMO was pre-empted by BCAIR a year earlier, and introduced the policy of 1:3:5 markings 1946. These Peter Malone images below of 82SQN A68-759 belly-landed at Bofu on its last flight on 22 FEB 1947 is from Red Roo's *The Modeller's Guide to the RAAF Mustang* by Gary Byk, shows that BCAIR introduced the 'Type-A' roundel <u>*before*</u> the MAY 1947 AMO A.413/47 policy,[47] apparently in response to ongoing Air Ministry discussions during 1946. This early implementation was probably done for standardisation of all its national flying units – RAF, RAAF, RNZAF and Indian squadrons. Furthermore, at least one PBY-5A Catalina of 113 ASR Flight escorting 81 Wing to Japan in early 1946 had the BCAIR 'Type-A' roundel.



A68-759 FA-U belly-landed at Bofu on <u>22 FEB 1947</u> – the E/E.88 confirms this was the last flight of the aircraft

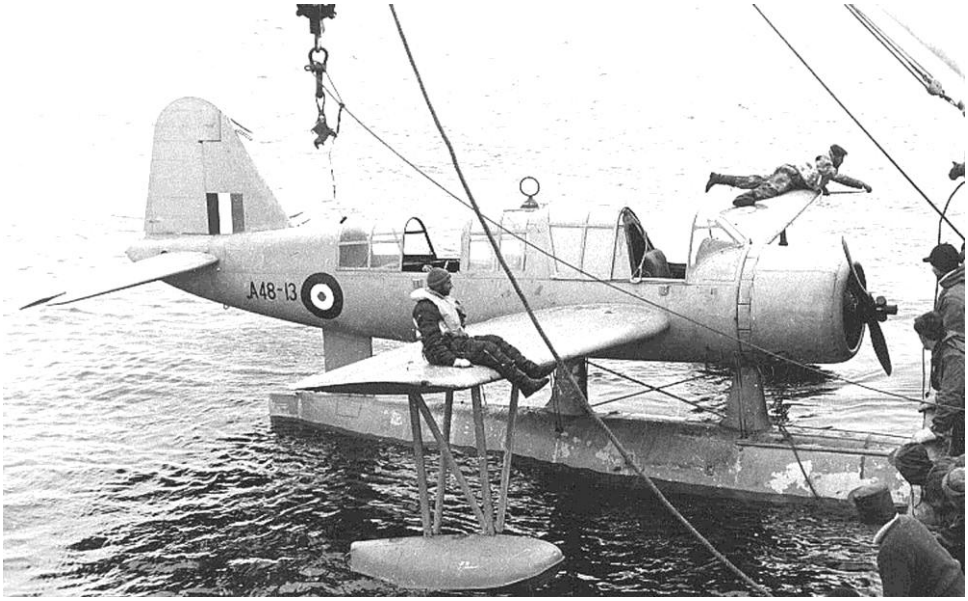
- **Air Publication AP.2656A Amendment Leaflet No.36 of OCT 1947** tried to correct the confusion generated by AMO A.413/47 by providing illustrations, and clarified what had really been meant was the introduction of a new roundel 1:2:3 ('Type-D'). The 'Type-D' was different proportions from any 'pre-war' roundel, but the intention had been to re-introduce red/white/blue in bright colours. This amendment appears to have bypassed BCAIR who probably didn't now want to change, and although the rest of the RAF did change to 'Type-D' roundels, BCAIR maintained 'Type-A' roundels until at least 1951. But even with this implemented 1:3:5 roundel, there was still some inconsistency due to slight variations of the red centre.

And the confusion in Australia…

- In **MAR 1946**, RAAF HQ D/OPS reported that "RAF Mission Melbourne advises that the Royal Air Force <u>*has reverted*</u> to the red, white and blue roundel marking".[48] This was incorrect. It may have been referring to BCAIR, but the Air Ministry had been planning for a change in 1946 prior to the preparation of AMO A.413/47.
- While the details of National Markings were being discussed through 1946 and 1947, there was still no RAAF requirement to introduce red to the National Marking. And, on the advice of D/OPS,[49] this was still the markings policy when RAAF HQ DTS Diagram A5524 in **OCT 1946** retained only *blue and white* roundels. And later, RAAF HQ DTS Minute in **AUG 1947** still specified that *"red in roundels is not a requirement"*.[50]
- But there was a change of heart only four months later when DTS reviewed a copy of AMO A.413/47, and while SIG/96 was being drafted in **DEC 1947**, red was now back on the table: *"Roundels – are to revert to pre-*

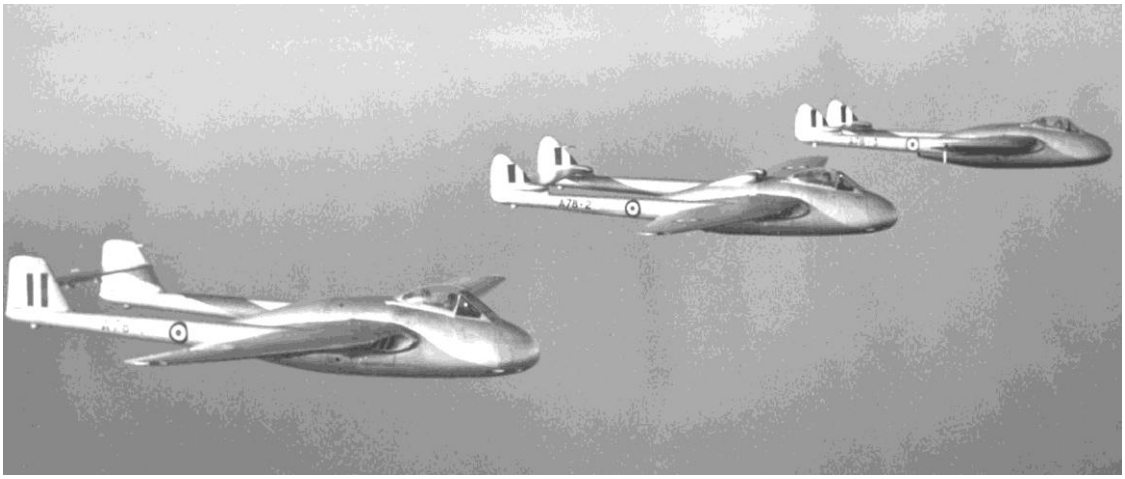
war colouring on aircraft i.e. Red, white, and blue (glossy)".[51] While *Blue* (K3/343) and *White* (K3/342) were now confirmed, the *Glossy Red* details were still to be identified. The proportions were specified as 1:2:3 (i.e. what we now refer to as 'Type-D'), and fin flash was to be equal proportions of red, white and blue.

- However, 3SQN Mustangs at Canberra were soon among the first RAAF aircraft to be marked immediately under the **JAN 1948** SIG/96 Instruction, and by misinterpreting the meaning of 'pre-war' roundel like BCAIR had done, applied the new roundels with the red in 1:3:5 proportions.
- Also in early 1948, the Antarctic Kingfisher A48-13 was marked soon after the implementation of SIG/96; an image of A48-13 being unloaded over the side of HMAS *Wyatt Earp* shows 'Type-A' roundels in MAR 1948,[52] and in our *adf-serials image gallery* we have the loading onto *Wyatt Earp* in **FEB 1948**.



A48-13 OS2U-3 Kingfisher being loaded in FEB 1948

1949. With the dust settling on the confusing change of a relatively simple addition of a 'red dot' to National Markings, overall 'silver' was now carried by most aircraft. **'High Speed Silver'** was the nickname given to overall gloss aluminium applied to RAF aircraft from the late 1940s – for Meteors, Canberras, Vampires and even later mark Spitfires. The RAF specification DTD 772 (in Air Publication A.P.2656A) refers to specific finishes in the RAF stores vocabulary 33B, and '*glossy aluminium*' was 33B-865. National markings glossy red, white and blue are also listed and defined by their stores identification in RAF A.P.1086 "Vocabulary of RAF Equipment", Sect.33B *Aircraft Finishes and Paint*.[53] A78-3 was a UK-produced Vampire FB.5, delivered in 1949 in aluminium finish, with 'Type-D' national marking in all positions – the new standard. The picture below shows all three UK-supplied Vampires at 1APU Laverton 1949. All three aircraft now have standard markings: the 1949 overall *High Speed Silver* aluminium, the RAF 1947 'Type-D' National Markings, and the 1948 RAAF SIG/96 specified glossy National Marking colours.



A78-1, A78-2 and A78-3 – all three UK-supplied Vampire fighter variants with 'Type-D' markings c1949

1950. The RAAF Standard for colours was the '3K5' specification, and the stores identifiers for aluminiums were K3/162 *Enamel Cellulose Aluminium*, and K3/168 *Dope Finishing Cellulose Aluminium*. The only bright colours used at this stage in the early 1950s were the National Markings: the glossy, brighter colours mirroring 1947 RAF policy

changes (in RAF Air Publications A.P.1086 and A.P.119A-0601-1E), and were specified in the 1948 RAAF SIG/96 as gloss **K3/346** *Glossy Red*, **K3/342** *White* and **K3/343** *Glossy Blue* colours.[54] **K3/346** *Glossy Red* was **BS381C-538** *Bright Red* or *Post Office Red*.[55] **K3/343** *Glossy Blue* was **BS381C-105** *Oxford Blue*.

Glossy Red K3/346 Glossy Blue K3/343

1951. The 1946 Issue 2 of AGI C11 3(C)1 was replaced by **Aircraft Engineering Instructions General (AEIG) Instruction No.11 Part 2 Sect 1 of 19 JAN 1951, Diagram A5524 sheets 1 and 4** gave National Marking sizes for a "medium-sized aircraft (i.e. a fighter) as 33" roundels and fin flash 24" x 22", and included the 3K/5 Standard 3K5 red and blue colours.

AIRCRAFT ENGINEERING INSTRUCTIONS GENERAL (AEIG) PART 2, SECTION 1
INSTRUCTION No. 11, JAN 1951

- 3 -

AIRCRAFT ENGINEERING INSTRUCTIONS GENERAL PART 2, SECTION 1 — INSTRUCTION NO. 11

(d) National markings - National markings, i.e., roundels, tail fin flashes and aircraft serial numbers will be applied to all Service aircraft regardless of any other special markings required. Roundels and tail fin flashes will be finished in colours Identification Glossy Red, White and Blue, (Ident. Nos. K3/346, K3/342 and K3/343 respectively). Aircraft serial numbers are to be finished in Identification Glossy Black, (Ident. No. K3/344).

For the position and dimensions of the roundels, tail fin flashes and aircraft serial number markings, refer to R.A.A.F. Diagram A5524, Sheets 1 and 2 attached.

The MAY 1951 AEIG Instruction No.9 (below) provides the identification of the K3/ glossy National Markings against the British BSI BS381C Standard.[56]

AIRCRAFT ENGINEERING INSTRUCTIONS GENERAL (AEIG) PART 2, SECTION 1
INSTRUCTION No. 9, MAY 1951

A.E.I.G. Part 2, Section 1 — Sheet 5 Instruction No.9

APPENDIX "D"

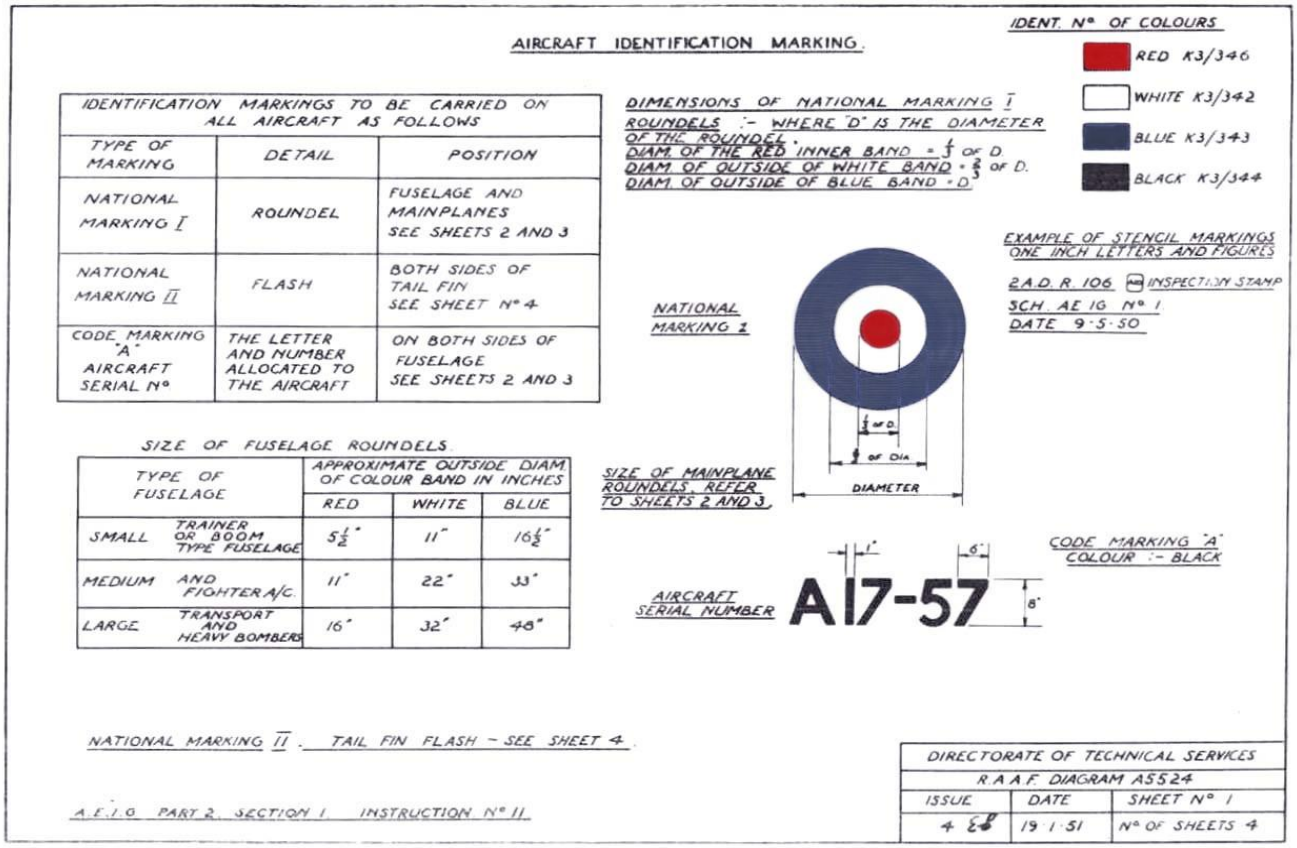
STANDARD DOPING AND FINISHING MATERIALS

The following dopes, finishes and undercoats to be used on R.A.A.F. aircraft are tabulated hereunder. This list is by no means complete, and only purports to cover major surface requirements.

Ident. No.	Nomenclature	Specification	Description	Applicable Finishing Scheme
	Colours Identification			
K3/344	Glossy Black	R.A.A.F. 3K5	Lettering all aircraft	1-6 inclusive
K3/346	Glossy Red (B.S.1. Colour No. 538)	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
K3/342	Glossy White	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
K3/343	Glossy Blue (B.S.1. Colour No. 105)	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
	Finishes - Aluminium and Camouflage			
K3/168	Aluminium	R.A.A.F. 3K5	Protective Covering	1-5 inclusive
K3/162	Aluminium	D.T.D. 63A	Protective Covering	4-6 alt. to K3/168
K3/185	Yellow (Matching B.S.1. Colour No.356)	R.A.A.F. 3K5	Training Aircraft bands only	1-3 inclusive
K3/324	P.R.U. Blue (Colour B.S.1. No. 103)	R.A.A.F. 3K5	Catalina Radomes	5
K3/323	White	R.A.A.F. 3K5	Catalina Radomes	5
K3/179	Night (Colour Black)	R.A.A.F. 3K5	Catalina Radomes	5

These RAAF DTS A5524 diagrams from the 1951 Instruction No.11[57] (below) have been coloured for ease of reference. The National Markings follow the SIG/96 colours of glossy K3/346, K3/342 and K3/343, and show the 1:2:3 proportions. While these National Marking colours have continued as the roundel's red and blue, the names changed under the 1975 Australian Defence Standard DEF(AUST) 572 to *Post Office Red* (AS K185-538) and *Oxford Blue* (AS K185-105).[58]

RAAF DTS DIAGRAM A5524
JAN 1951



AIRCRAFT IDENTIFICATION MARKING.

IDENT. N° OF COLOURS
RED K3/346
WHITE K3/342
BLUE K3/343
BLACK K3/344

IDENTIFICATION MARKINGS TO BE CARRIED ON ALL AIRCRAFT AS FOLLOWS		
TYPE OF MARKING	DETAIL	POSITION
NATIONAL MARKING I	ROUNDEL	FUSELAGE AND MAINPLANES SEE SHEETS 2 AND 3
NATIONAL MARKING II	FLASH	BOTH SIDES OF TAIL FIN SEE SHEET N° 4
CODE MARKING "A" AIRCRAFT SERIAL N°	THE LETTER AND NUMBER ALLOCATED TO THE AIRCRAFT	ON BOTH SIDES OF FUSELAGE SEE SHEETS 2 AND 3

DIMENSIONS OF NATIONAL MARKING I
ROUNDELS :- WHERE "D" IS THE DIAMETER
OF THE ROUNDEL
DIAM. OF THE RED INNER BAND = 1/3 OF D.
DIAM. OF OUTSIDE OF WHITE BAND = 2/3 OF D.
DIAM. OF OUTSIDE OF BLUE BAND = D.

EXAMPLE OF STENCIL MARKINGS ONE INCH LETTERS AND FIGURES
2.A.D.R. 106 INSPECTION STAMP
SCH. AE 16 N° 1
DATE 9·5·50

NATIONAL MARKING I

SIZE OF FUSELAGE ROUNDELS

TYPE OF FUSELAGE	APPROXIMATE OUTSIDE DIAM OF COLOUR BAND IN INCHES		
	RED	WHITE	BLUE
SMALL TRAINER OR BOOM TYPE FUSELAGE	5½"	11"	16½"
MEDIUM AND FIGHTER A/C.	11"	22"	33"
LARGE TRANSPORT AND HEAVY BOMBERS	16"	32"	48"

SIZE OF MAINPLANE ROUNDELS REFER TO SHEETS 2 AND 3.

AIRCRAFT SERIAL NUMBER

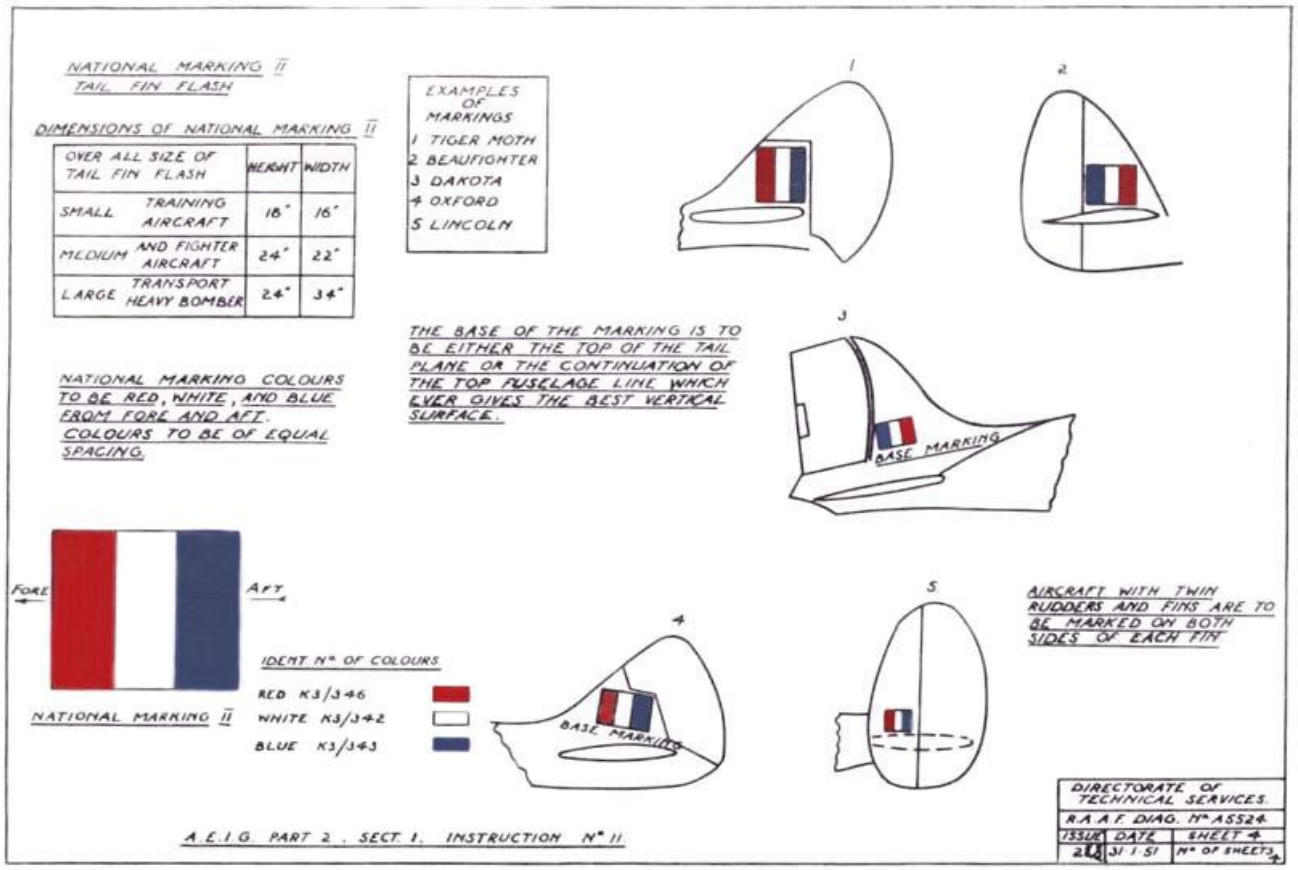
CODE MARKING "A" COLOUR :- BLACK

NATIONAL MARKING II . TAIL FIN FLASH - SEE SHEET 4.

A.E.I.G. PART 2. SECTION I. INSTRUCTION N° 11

DIRECTORATE OF TECHNICAL SERVICES		
R.A.A.F. DIAGRAM A5524		
ISSUE	DATE	SHEET N° 1
4	19·1·51	N° OF SHEETS 4

A5524 Sheet No.1 showing 1951 National Marking I (Roundel)



NATIONAL MARKING II
TAIL FIN FLASH

DIMENSIONS OF NATIONAL MARKING II

OVER ALL SIZE OF TAIL FIN FLASH		HEIGHT	WIDTH
SMALL	TRAINING AIRCRAFT	18"	16"
MEDIUM	AND FIGHTER AIRCRAFT	24"	22"
LARGE	TRANSPORT HEAVY BOMBER	24"	34"

EXAMPLES OF MARKINGS
1 TIGER MOTH
2 BEAUFIGHTER
3 DAKOTA
4 OXFORD
5 LINCOLN

THE BASE OF THE MARKING IS TO BE EITHER THE TOP OF THE TAIL PLANE OR THE CONTINUATION OF THE TOP FUSELAGE LINE WHICH EVER GIVES THE BEST VERTICAL SURFACE.

NATIONAL MARKING COLOURS TO BE RED, WHITE, AND BLUE FROM FORE AND AFT. COLOURS TO BE OF EQUAL SPACING.

NATIONAL MARKING II

IDENT. N° OF COLOURS
RED K3/346
WHITE K3/342
BLUE K3/343

AIRCRAFT WITH TWIN RUDDERS AND FINS ARE TO BE MARKED ON BOTH SIDES OF EACH FIN

A.E.I.G. PART 2. SECT. I. INSTRUCTION N° 11

DIRECTORATE OF TECHNICAL SERVICES.		
R.A.A.F. DIAG. N° A5524.		
ISSUE	DATE	SHEET 4.
2	31·1·51	N° OF SHEETS 4

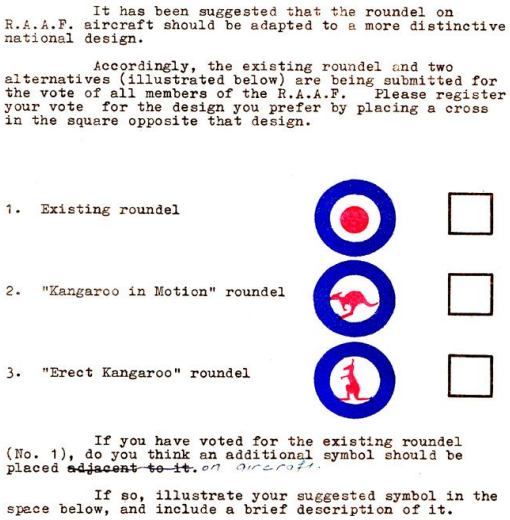
A5524 Sheet No.4 showing National Marking II (Tail Fin Flash)

And just to refresh… the **introduction of the kangaroo roundel** in 1956, from *adf-serials Telegraph*, 2016 Spring.[59]

Search for a Kangaroo – ‘standing’ WWI Minchinhampton or ‘leaping’ WWII 456 SQN

Consideration for a kangaroo as the national marking had come from several quarters, and in March 1955 the RAAF Air Board formalised the proposal. Most credibility was towards a leaping or a standing “erect” kangaroo, over other ideas of a southern cross and a boomerang, and the marking should retain the traditional red, white and blue. The Air Board recommended on 3 JUN 1955 that new roundels should undergo service trials on two Sabre aircraft, and a standing kangaroo on one Sabre was shown in Melbourne’s *The Age* on 13 SEP 1955.[60] This has perhaps been misinterpreted as two Sabres having the erect kangaroo – it is probable that one of the Sabres had a leaping kangaroo. As part of the trial, on 13 OCT 1955 approval was also given to mark a Beaver bound for Macquarie Island with a new kangaroo-style roundel.[61]

In April 1956, a vote was taken of serving RAAF personnel, with the ballot form shown below. The choices were to retain the present roundel (1:2:3 ‘Type-D’), retain the present roundel with an additional national symbol, or to adopt a new roundel design with either a kangaroo “in motion” or “erect”.



It has been suggested that the roundel on R.A.A.F. aircraft should be adapted to a more distinctive national design.

Accordingly, the existing roundel and two alternatives (illustrated below) are being submitted for the vote of all members of the R.A.A.F. Please register your vote for the design you prefer by placing a cross in the square opposite that design.

1. Existing roundel ☐

2. "Kangaroo in Motion" roundel ☐

3. "Erect Kangaroo" roundel ☐

If you have voted for the existing roundel (No. 1), do you think an additional symbol should be placed ~~adjacent to it.~~ on aircraft.

If so, illustrate your suggested symbol in the space below, and include a brief description of it.

The erect kangaroo of course had its origins with Oswald Watt in 1914 and his introduction of the marking at Minchinhampton in 1918. The leaping kangaroo was 456 Squadron “penny” kangaroo and had been carried on that Squadron’s Mosquitoes over 1943-45.

In 1956, 9442 RAAF personnel voted, and 81% voted for the “kangaroo in motion”. On 8 JUN 1956, the Air Board proposed to adopt the new roundel and approval was given by the Minister for Air on 2 JUL 1956.[62] The kangaroo was adopted for the fuselage only – the wings would follow nine years later. But the RAN did decide to use the leaping kangaroo in all roundel positions, with the mainplane kangaroos facing forward and legs pointing inboard. The selection of the “kangaroo in motion” led to the overpainting of the RAF ‘Type-D’ roundels red centre with the red leaping kangaroo.

NORTH AMERICAN and CAC MUSTANG

All of the RAAF's imported North American P-51DK Mustangs were delivered in 1945, in so called 'natural metal' finish (in reality with unpainted fuselages and silver painted wings and rudders), as were the CAC-produced aircraft from Fisherman's Bend delivered over 1945-51. The only camouflaged RAAF Mustang in Australia was the 'pattern' P-51D delivered at the end of 1944. All the NA-aircraft had olive drab anti-glare decking, and the CAC aircraft had matt black. The P-51D had the Hamilton Standard 11'2" diameter propeller, and the P-51K the 11' Aeroproducts propeller.

RAAF Mustang Variants

To clarify the versions of A68-registered Mustangs operated by the RAAF in the Pacific (at home and in Japan), the following provides an easy summary:

P-51D-5-NA NAA model 109 A68-1001 pattern aircraft for CA-17 assembly, and prototype for CA-18 Mk.23 Merlin 66.

CA-17 Mk.20 A68-1 to A68-80, assembled by CAC from 100 supplied P-51D-5-NA (NAA-110) kits,[63] powered by Packard Merlin V-1650-3 or 7 (interchangeable)

CA-18 Mk.21 A68-95 to A68-120 with V-1650-3 or -7 engine

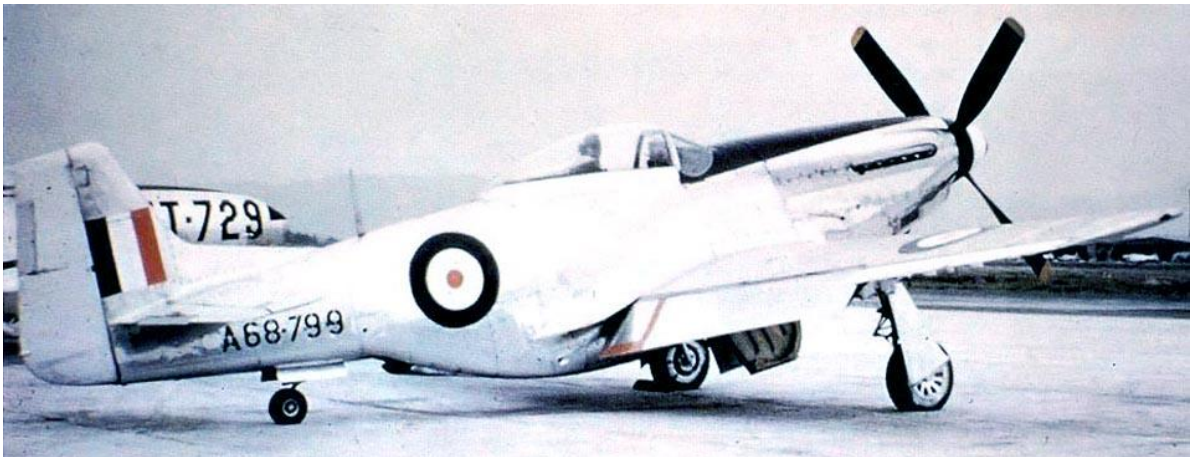
CA-18 Mk.22 PR A68-81 to A68-94, and A86-187 to A68-200, V-1650-7 engine, to 3SQN Canberra

CA-18 Mk.23 higher powered RR Merlin 66 or 70, A68-121 to A68-186; four aircraft to 77SQN Korea.[64]

P-51K-15/20-NT NAA model 111 A68-500 to A68-583, V-1650-7 with the 11' Aeroproducts propeller; many to Townsville squadrons (84 and 86 SQNs), six to 81 Wing Labuan SEP 1945 to assist conversion from Kittyhawks.[65]

P-51D-20-NT NAA model 111, A68-600 to A68-699, V-1650-7 with Hamilton Standard 11'2" diameter propeller, some to Australian-based 2OTU, but most to storage.

P-51D-25-NT NAA model 124, A68-700 to A68-813, V-1650-7 with Hamilton Standard 11'2" diameter propeller, most to 81WG Labuan and Japan.



P-51D A68-799 illustrates the marking chronology of the RAAF Mustang units in Japan:
*from Australian 2AD storage to 77SQN (81 Wing) in JUL **1947**, and then marked immediately with the BCAIR roundels (similar to 'Type-A'), squadron codes no longer marked from mid-**1948**, in MAY **1949** 77SQN control passes from 81WG to 77 being an independent unit, until then in OCT **1950** 77SQN becomes under the control of 91 (Composite) Wing* [66]

Serial Number	Serial Policy [67]	Aircraft Mark	Remarks
A68-1 to -200	Consecutive	CAC Mustang	CAC CA-17 Mk.20, and CA-18 Mks.21, 22 and 23.
A68-500 to -583	Block	NA P-51K	P-51Ks mainly to the North QLD units (84 and 86
A68-600 to -813	Block	NA P-51D	SQNs), P-51Ds to Japan (76, 77 and 82 SQNs).
A68-1001	Prototype	NA P-51D	A68-1001 delivered as a production pattern.

National Markings

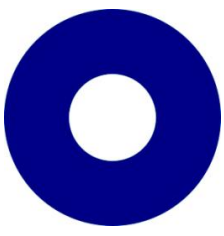
Roundel Changes. The roundel style differed greatly by changing RAAF Policy over 1948-56, so as a comparison of Mustang national markings we will look back before this period as our BCAIR Mustangs in Japan adopted red in these markings in 1946 (prior to the RAAF in Australia), and see the development until retirement of the Mustang in 1959.

In 1945, when the Lend-Lease P-51Ks (A68-500 to -583) and P-51Ds (A68-600 to -813) were delivered in 1945, they had been marked at the North American Dallas plant with RAAF 'Pacific' 2:5 roundels with the corresponding fin flash:

- our North Queensland-based P-51Ks and Japanese-based P-51D 81 Wing (in the British Commonwealth Air Forces - BCAIR) were marked with 2:5 roundels;
- for Japan-based aircraft, BCAIR introduced in 1946 the red-white-blue national markings similar to the pre-war 'Type-A' 1:3:5 roundel (i.e. small red inner circle) and fin flash;
- Australian production from 1945 also were marked with Pacific roundels, but in the thinner blue ring 3:5 format, and this continued up to early 1948 when production was up to and including A68-108 [68] – CAC production at this stage was feeding several training units, including 78 Wing at Williamtown;
- policy RAAF HQ DTS Special Instruction General/96 (SIG/96) of JAN 1948 introduced the red-white-blue 1:2:3 'Type-D' roundel, and this was applied to subsequent CAC production up to A68-200; and
- in 1956, the kangaroo roundel was introduced onto the fuselage of RAAF aircraft.

As well as David Muir's excellent and definitive Mustang work (*Southern Cross Mustangs, on which much of this Supplement is based*), Ian Baker's *Aviation History Colouring Book* series also addresses the RAAF Mustang up to 1951, over several editions.[69] Below is a summary of roundel types for RAAF Mustangs, with post-1948 markings being brighter colours and gloss.

AUG 1947 – A68-760 FA-K 82SQN at Kisarazu, near Tokyo, for a mass flyover on the formation of the USAF

Pacific 2:5	Pacific 3:5	BCAIR/'Type-A'	Type-D	Kangaroo
				
1945-47 P-51Ds and P-51Ks	**1945-48** CAC production up to including A68-108	**1946-51** 81WG BCAIR Japan, then 77SQN	**From 1948** Policy SIG/96 introduced JAN 1948	**From 1956** Fuselage kangaroo introduced JUL 1956

RAAF NAA P-51D/K MUSTANGS
These aircraft generally all had 'Pacific' 2:5 roundels, 32" diameter in all positions (a handful had 40" wing roundels); fin flash was 24" high and approximately 22" wide.[70]
RAAF CAC CA-17/CA-18 MUSTANGS
Initial CAC production all had 'Pacific' 3:5 roundels. The DTS SIG/96 JAN 1948 policy of red-white-blue 'Type-D' markings impacted CA-18s from the delivery of A68-109 onwards.[71]

That Odd BCAIR Roundel. As related, for 81WG in Japan - as part of British Commonwealth Air Forces - the blue-white roundels were changed in accordance with RAF policy to a red-white-blue roundel similar to the pre-War 'Type-A' national markings in 1946. This contradictory policy caused confusion throughout the RAAF.

- The UK Air Ministry policy **Air Maintenance Order (AMO) A.413/47 dated 15 MAY 1947** stated that the RAF would revert to the 'pre-war' roundel on all aircraft.[72] But with no accompanying illustration of the roundel in the AMO, the 1:2:3 dimensions provided were queried, as what was proposed was not the 'pre-war' roundel, as the pre-war roundel's red centre was only half that quoted in the AMO. Basically, what had been intended was a ***new*** 1:2:3 roundel (later described as a 'Type-D'), but the real pre-war roundel had a small red circle (1:3:5, later defined as a 'Type-A'). This directive had been pre-empted by BCAIR probably for early standardisation between its units, and introduced the 1:3:5 markings in 1946 before issue of the AMO.
- **Air Publication AP.2656A Amendment Leaflet No.36 of OCT 1947** did provide illustrations, and clarified what had really been meant was 1:2:3 ('Type-D'). However, this amendment appears to have bypassed BCAIR, and although the rest of the RAF and RAAF did change to 'Type-D' roundels, BCAIR maintained variations of 'Type-A' style roundels until 1951. But even with the supposed 1:3:5 roundel, there was still considerable inconsistency due to slight variations of the red centre, shown below on A68-755 (with red even smaller than the 1:3:5 requirement).

1946-47 – 81 Wing P-51D change of Pacific roundels (on A68-708 AM-E) to BCAIR red-white-blue 1:3:5 roundels

A68-755, Iwakuni 1950, with BCAIR 'even smaller red' roundel, *rectangular stencil* serial and 77's coloured spinner

Australian-based Mustang Roundels. All CAC CA-17 aircraft were delivered with 27.5”-diameter ‘Pacific’ 3:5 roundels, subsequently changed to ‘Type-D’ roundels from 1948, by DTS SIG/96 of JAN 1948. The imported P-51D and P-51Ks were delivered with ‘Pacific’ 32” 2:5 roundels which were changed from 1946 for the BCAIR aircraft to resemble a ‘Type-A’ roundel, and for Australian-based aircraft to ‘Type-D’ national markings from 1948.

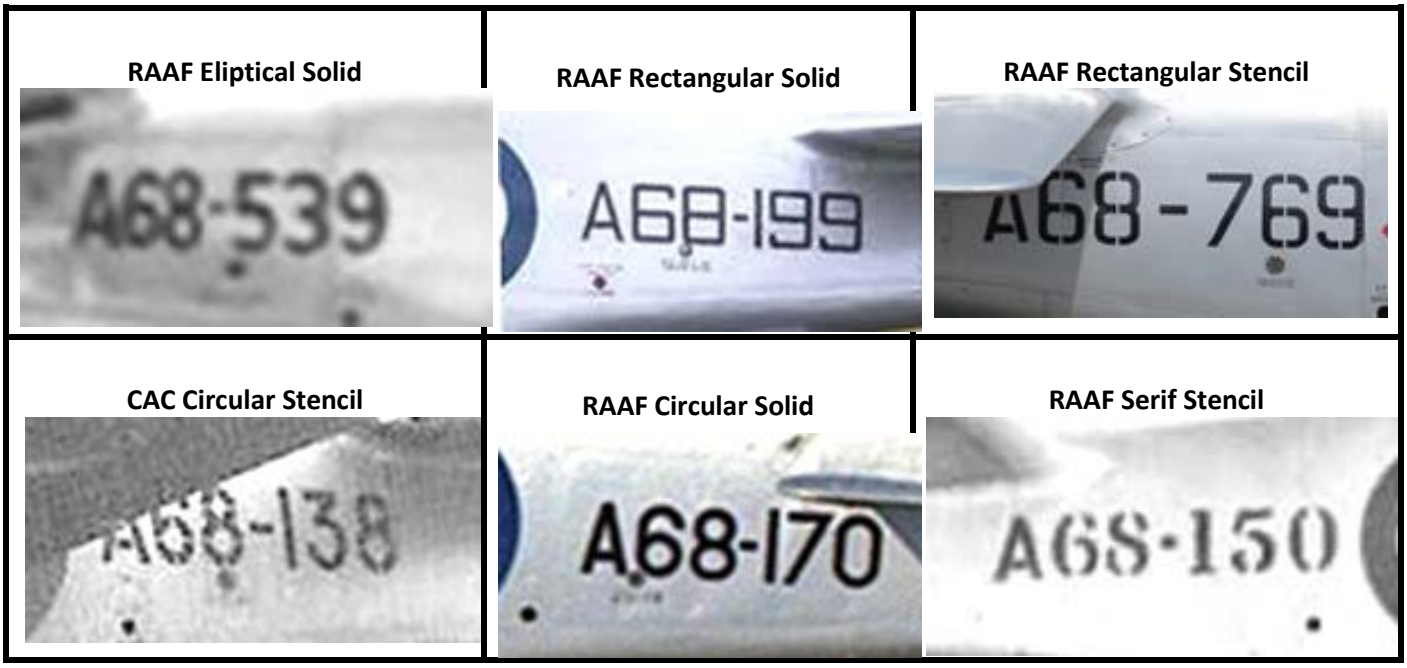
- All the P-51Ks (84 and 86SQNs), and some P-51Ds were Australian-based – 2OTU at Williamtown operated some of the P-51Ks and many of the A68-600-series P-51Ds; the A68-700 and -800-series P-51D-25-NTs went to 81 Wing in Japan (76, 77 and 82 SQNs).
- All CA-17s were delivered to Australian-based units (78 Wing: 75 and 78SQNs), CAF squadrons and training units; this was generally the same for CA-18s, although Mk.22 PR aircraft went to 4SQN then 3SQN, with some incorrectly re-marked in 1948 with ‘Type-A’ roundels instead of ‘Type-D’ roundels (see A68-86 below).
- In addition, four Australian CA-18 Mk.23s did reach Iwakuni in 1951 with correct ‘Type-D’ markings. These four CA-18s served in Korean operations with 77SQN (A68-121, 123, 125 and 130), and a further 12 were allotted to 77SQN operations but were held back in Australian storage in early 1951 at 2AD.[73]

A68-43 CA-17 Mk.20 delivered to 75SQN FEB 1947 with the standard CAC production 3:5 roundel, which changed with the delivery of A68-109 in JAN 1948(Credit AHM (WA) & R. Hourigan)

A68-86 3SQN Mk.22 photo-recce 1948, ‘Pacific’ 3:5 roundels incorrectly converted to proportions similar to ‘Type-A’

Serial Numbers. The Mustang used just about every style and font for the 8” individual serial number. *Southern Cross Mustangs* describes these different styles in great detail, as there was an “absence of a clear instruction as to a *standard* typeface”.

The main examples below.



RAAF Mustang Serial Fonts [74]

Mustang Squadron Codes and Markings

Squadron Codes. The Townsville P-51K squadrons carried codes over 1945: 84SQN 'LB' and 86SQN 'MP'. 78 Wing, Williamtown, carried codes over 1947: 75SQN 'GA' and 78SQN 'HU'. While RAAF squadron code letters at home were deleted in AUG 1947 by DTS SIG/92,[75] 81 Wing being part of the BCAIR command retained squadron codes until 1948.[76] The squadron codes used by 81Wing over 1945-48 were 76SQN 'SV', 77SQN 'AM', and 82SQN 'FA' – see the 81WG images. These codes were eventually cancelled in response to security concerns raised by the Berlin Airlift in JUN 1948.[77] The 'two letter' Squadron codes were removed first with the individual codes following some time later. While DTS SIG/92 broadly defined the size and general placement of codes, as with the serials each unit used different and distinctive fonts and there were numerous variations on the height, location and style. All the known variations are described and illustrated in *Southern Cross Mustangs*.

SEP 1947 – A68-787 AM-A 77SQN crashed at Bofu, marked with squadron codes and BCAIR roundels

Townsville Wing 1945		81 Wing Labuan / Bofu / Iwakuni 1945-1948			78 Wing Williamtown 1947	
84SQN	86SQN	76SQN	77SQN	82SQN	75SQN	78SQN
LB	**MP**	**SV**	**AM**	**FA**	**GA**	**HU**
18" high	20" high with 4" strokes	22.5", replaced by smaller 18"	18" high	18" high	27" high	27"high

Squadron code letters styles 1945-1948 [78]

Squadron Fin Markings. The individual 81WG squadron markings carried above the fin flash were: 76SQN a horizontal red lightning bolt (in the same style as the yellow flash previously marked on its Kittyhawks); 77SQN a black and white magpie on a red arrow head; 82SQN a white Pegasus on a dark blue disc with a yellow '82'.[79]

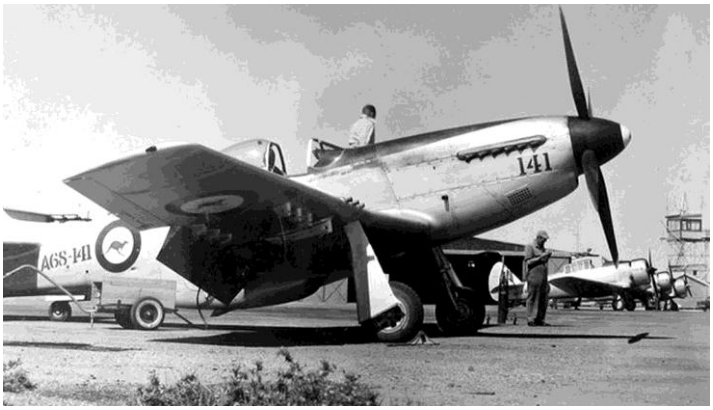
A68-765 SV-K 76 Sqn marked with Sqn Codes, Fin Flash and BCAIR roundels, crashed at Hikari Japan 1947. Credit: GRB RAAF Offical Collection collection

Coloured spinners. All early Mustang deliveries had bare metal spinners. A small number were given distinctive spinner patterns and colours which appear to identify particular pilots or roles within the unit (e.g. Flight Leader). From 1947 the three units of 81WG in Japan adopted spinner colours: 76SQN were painted red, 77SQN white, and 82SQN dark blue.[80] This may have been to aid identifying a unit's aircraft during demonstrations and competitions.[81] When 81WG disbanded, 77SQN began to use red/white/blue banded spinners.

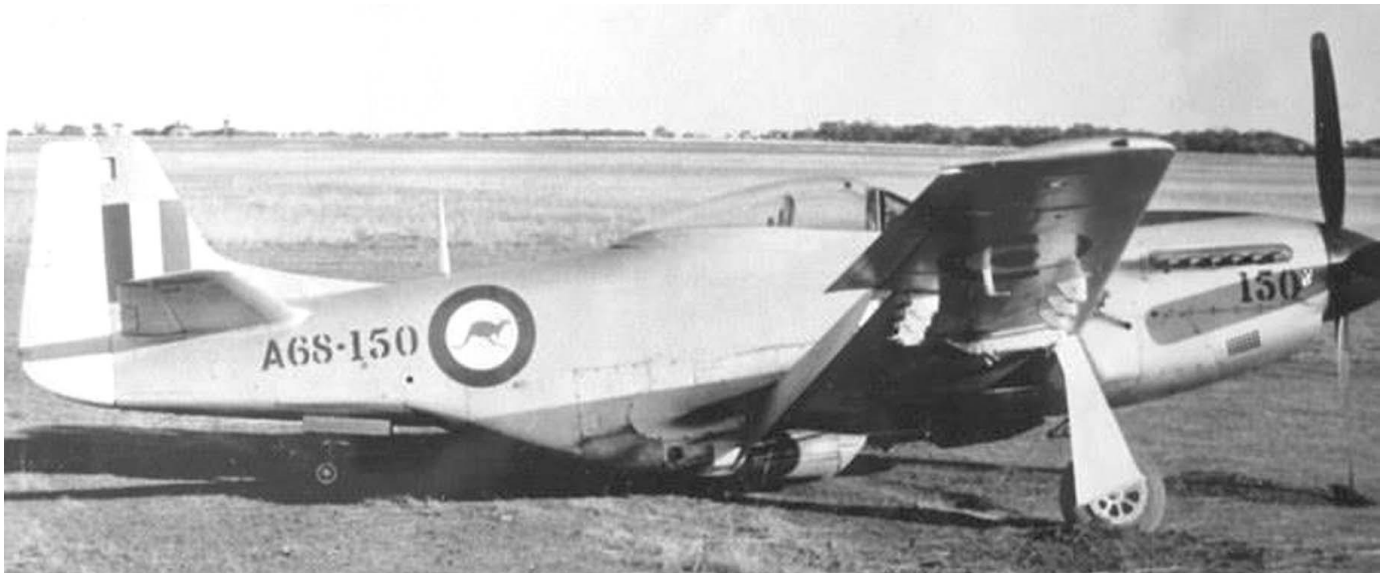
1948 – 81 Wing at Iwakuni, blue-spinnered 82SQN in front row, white-spinnered 77SQN behind:
while the BCAIR roundel markings were applied in 1946, squadron code letters were not removed until mid-1948

US-provided P-51D with Hamilton Standard propeller, with USAAF underwing marking and RAAF fin flash

And Later…Mustangs with Kangaroos. As 24SQN was the only CAF unit to retain its Mustangs and not transition to jets, with the introduction of the kangaroo in JUL 1956, 24SQN Mustangs carried that roundel from 1956 until disposal in 1960. In an incorrect interpretation of the kangaroo's introduction to the *fuselage only*, David Muir's research shows **A68-141** and **A68-162** had kangaroos also applied to the mainplanes.[82] However, other known correctly marked 24SQN aircraft were: A68-123, A68-143 and A68-150. In addition, at least one ARDU Mustang, A68-158, carried the kangaroo.

A68-123 crashed in NOV 1957 (left), and (right) A68-141 c 1957



A68-150 kangaroo roundel and serial *Serif Stencil*, and (below) after an undercarriage incident in JAN 1959

AUSTRALIAN-BASED P-51Ks

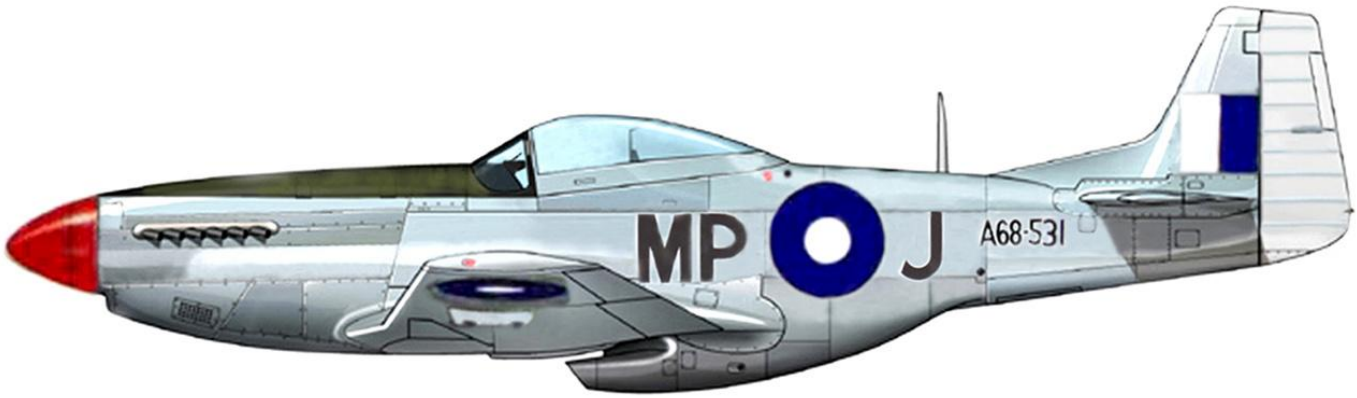
A68-527 LB-T – 84 SQUADRON

A68-527 LB-T 84SQN with 32” roundels, 24” x 22” flash, 18” codes, silver spinner at Garbutt Townsville 1945. Other 84SQN aircraft included A68-520 LB-N (‘Nuts to Nippon’), A68-523 LB-O, A68-526 LB-W, A68-529 LB-K, A68-542 LB-F, A68-548 LB-V, A68-553 LB-M, A68-554 LB-X, A68-557 LB-Z, A68-558 LB-S, A68-561 LB-B, and A68-565 LB-V.

A68-520 LB-N – 84 SQUADRON

A68-520 LB-N ‘Nuts to Nippon’, these markings and eagle on A68-527 (above) from *Southern Cross Mustangs*.[83] The US-supplied P-51s were all Dallas ‘NT’-produced (except A68-1001 from the Inglewood ‘NA’ plant). They had the 2:5 roundels marked in *Insignia Blue 605* and *Insignia White 601*, anti-glare nose decking in *Olive Drab 613*.[84]

A68-531 MP-J – 86 SQUADRON



A68-531 MP-J 86SQN red spinner, 20” codes, at Bohle River Townsville 1945. Other 86SQN Mustangs included A68-522 MP-E, A68-528 MP-V, A68-535 MP-F, A68-544 MP-F, A68-555 MP-S, A68-563 MP-O, and A68-564 MP-T. 86SQN A68-531 and 84SQN A68-527 both have the ‘elliptical solid’ font of RAAF serials – a style that was applied at the NAA Texas factory, and appears restricted to only some of the P-51Ks (i.e. the A68-500-series Mustangs).

81 WING JAPAN P-51D-25-NT MUSTANGS

A68-738 SV-P – 76 SQUADRON

A68-738 SV-P 76SQN silver spinner, 32" roundels, some 76 aircraft had red spinners, red tail flash added NOV 1945, 18" codes (smaller than the earlier *'serifed'* 22"-high codes). Known 76 codes: A68-722 SV-A, A68-723 SV-B, A68-725 SV-D, A68-729 SV-R, A68-730 SV-F, A68-733 SV-P and SV-V, A68-737 SV-W, A68-739 SV-Q, A68-740 SV-R, A68-742 SV-S, A68-751 SV-U, A68-754 SV-O, A68-761 SV-U, A68-772 SV-G, A68-774 SV-X, A68-775 SV-K, A68-776 SV-L, A68-786 SV-Z, A68-796 SV-N. BCAIR 1:3:5 national markings replaced the 'Pacific' 2:5 roundels from 1946. 'SV' squadron codes were removed in 1948, red lightning flash both sides.[85] 76 and 82 disbanded Iwakuni OCT 1948.

A68-749 AM-S – 77 SQUADRON

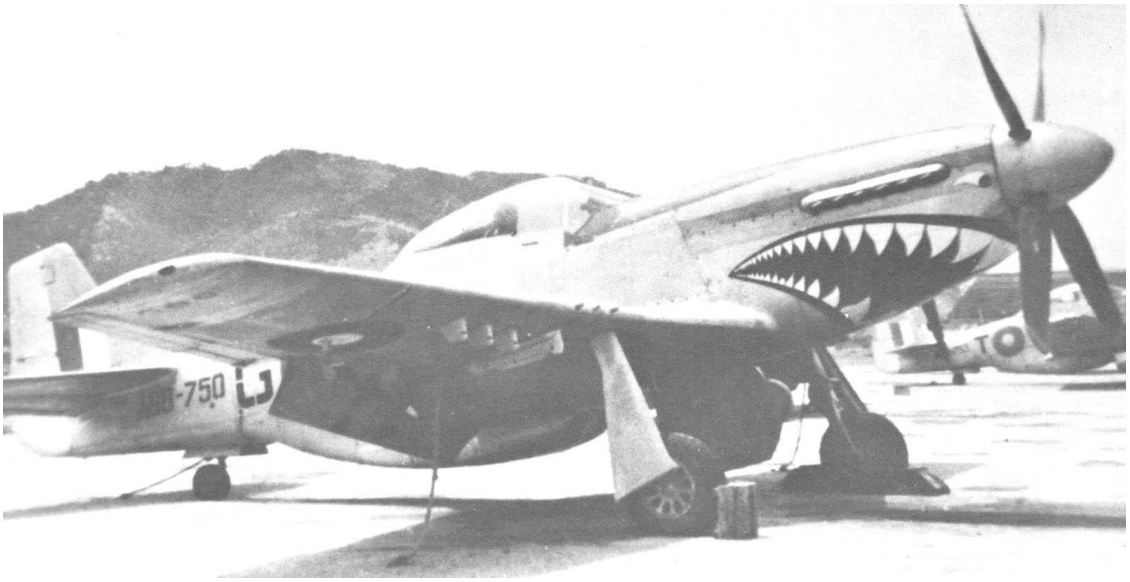
A68-749 AM-S 77SQN 32" roundels, 18" codes, silver spinner, white spinners from SEP 1947.[86] Others: A68-700 AM-A, A68-703 AM-C, A68-704 AM-X, A68-705 AM-P, A68-707 AM-L, A68-708 AM-E, A68-712 AM-G, A68-714 AM-I, A68-724 AM-K (spiral spinner), A68-728 AM-N, A68-745 AM-M, A68-750 AM-G, A68-753 AM-T, A68-754 AM-O, A68-761 AM-W, A68-766 AM-V, A68-779 AM-F, A68-781 AM-Z, A68-787 AM-A, A68-788 AM-Q, A68-789 AM-D, A68-790 AM-X, A68-795 AM-W, A68-798 AM-Y. 77SQN fin badge of red and black arrow, with black and white magpie superimposed.[87] 77SQN moved from Labuan to Bofu MAR 1946, then Bofu to Iwakuni MAR 1948.

A68-766 FA-V – 82 SQUADRON

A68-766 FA-V dark blue spinner, dark blue disc on fin with white Pegasus.[88] A68-704 FA-X, A68-710 FA-O, A68-715 FA-D, A68-719 FA-W, A68-720 FA-R, A68-721 FA-J, A68-722 FA-A, A68-736 FA-P, A68-743 FA-F, A68-744 FA-L, A68-748 FA-U/FA-H, A68-759 FA-U, A68-760 FA-K, A68-763 FA-Y, A68-767 FA-N, A68-768 FA-S, A68-769 FA-◊, A68-772 FA-A, A68-780 FA-T, A68-784 FA-M, A68-791 FA-E, A68-793 FA-B, A68-798 FA-Y, A68-804 FA-Z, A68-811 FA-U.

77 SQUADRON – A68-750 AM-G 'SHARKMOUTH'

77SQN Sharkmouth: A68-750 AM-G of 77SQN's CO SQNLDR Ron Susans in Bofu, Japan 1947 [89]



In 1947, 77SQN markings: 32"-diameter 'Pacific' 2:5 roundel had yet to be changed, 24" x 22" fin flash, 18"-high codes, *Rectangular Stencil* serials. The correct colouring of the Sharkmouth were reversed in the reproduced markings on the RAAF's A68-170 (below) – correct markings were a black mouth and white teeth with red lips.[90]

RAAF Museum's A68-170 in the guise of A68-750, but with the Sharkmouth colours reversed

77 SQUADRON KOREA

77SQN red-white-blue spinners: A68-708 of 77SQN in Japan 1949, above, and A68-757.

A68-121, one of four CA-18 Mustangs with 77SQN at Iwakuni in JUN 1951. "Woman's Day" magazine cover of 77SQN in NOV 1950 (features "How to Get a Husband", "RAAF in Korea": how womens' magazines have changed!)

CO 77SQN WGCDR Lou Spence's A68-809 with red spinner 1950

78 WING WILLIAMTOWN CA-17 MUSTANGS

A68-43 GA-V – 75 SQUADRON

A68-43 75SQN GA-V at Williamtown 1946-47, black spinner, WGCDR Creswell OC 78 Wing's pennant; other aircraft delivered in 1946 A68-72, A68-78 (GA-B) and A68-80; by NOV 1946 75SQN had 12 aircraft.[91] The requirement for squadron codes was cancelled by DTS SIG/92 in AUG 1947 (Mustang units in BCAIR retained them until 1948). Below, A68-78 GA-B and 75SQN line-up 1947, from *Southern Cross Mustangs.* CAC CA-17 aircraft wore 27.5" 'Pacific' 3:5 roundels,[92] changed to 'Type-D' in 1948. In 1949, 75 and 76SQNs comprised 78WG preparing for Malta.

Credit: AHM (WA) via 'Buz' Busby collection

A68-71 HU-A – 78 SQUADRON

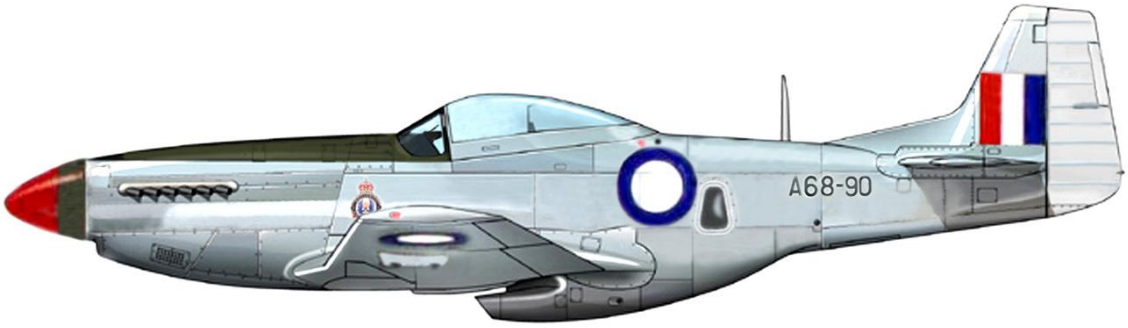
A68-71 78SQN HU-A at Williamtown 1946-48; other aircraft other aircraft delivered in 1946 were A68-52, A68-68 and A68-69. Like 75SQN, by FEB 1947 there were 12 aircraft on strength.[93] Both squadron carried larger 27" high codes, deleted in AUG 1947. Most aircraft dispersed to CAF squadrons when 78SQN disbanded on 1 APR 1948.

ARMY COOPERATION at CANBERRA - CA-18 MUSTANG Mk.22s

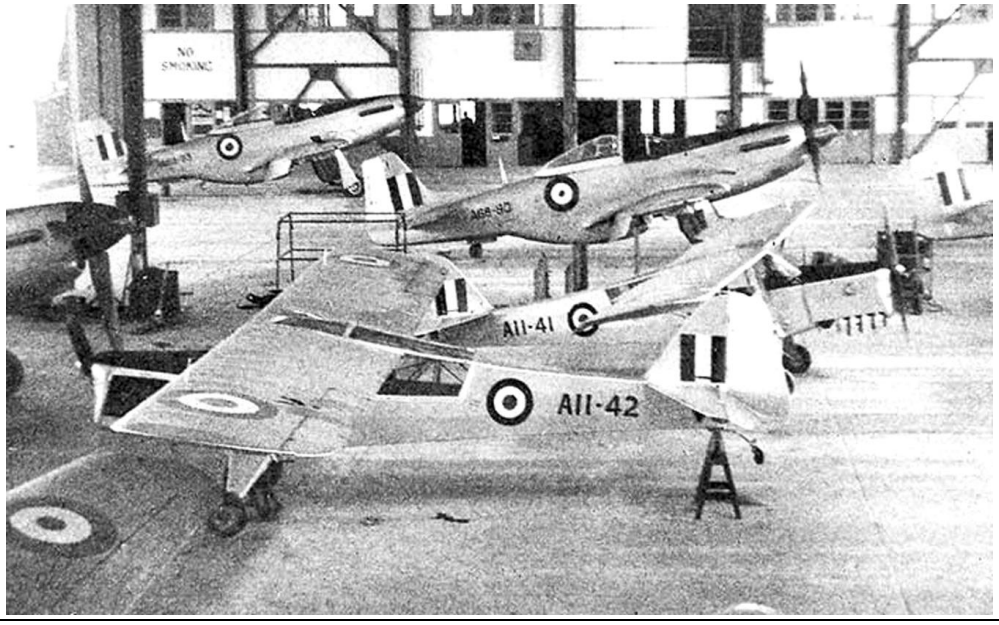
4 SQUADRON

A68-81 marked with a SQNLDR's CO pennant for 4SQN – this unit operated from FEB 1947 until MAR 1948 at Canberra. 4SQN also operated *Foliage Green* AOP.III Austers, all aircraft with Pacific 2:5 blue-white National Markings. The PR Mk.22s were delivered from CAC from AUG 1947 with 3:5 roundels, later changed to 'Type D' roundels from 1948 (by DTS SIG/96 of JAN 1948) – some aircraft mistakenly received the 'Type-A' BCAIR roundels. A68-81 retained the CO pennant when 4SQN was re-named 3SQN in MAR 1948, gaining a 3SQN badge on the nose.

3 SQUADRON



A68-90 at the change-over of National Markings in the first half of 1948 – Mk.22 A68-90 (above and below) had a red spinner, and a 3SQN badge on the forward port fuselage. It still retained the Pacific 3:5 roundel in 1948, awaiting the addition of the red inner disc, but with red-white-blue 'Type-D' fin flash. As this was in the change-over, from the image below it appears that only a small "red dot" was added incorrectly to make a BCAIR 'Type-A' roundel – other 3SQN aircraft so marked were A68-85, A68-86 and A68-87, but this would have been corrected during 1948 to a properly proportioned 'Type-D' roundel. Mk.22 roundels on both side of the fuselage were moved forward and higher to allow for the oblique port-side F24 camera window and the starboard side access.

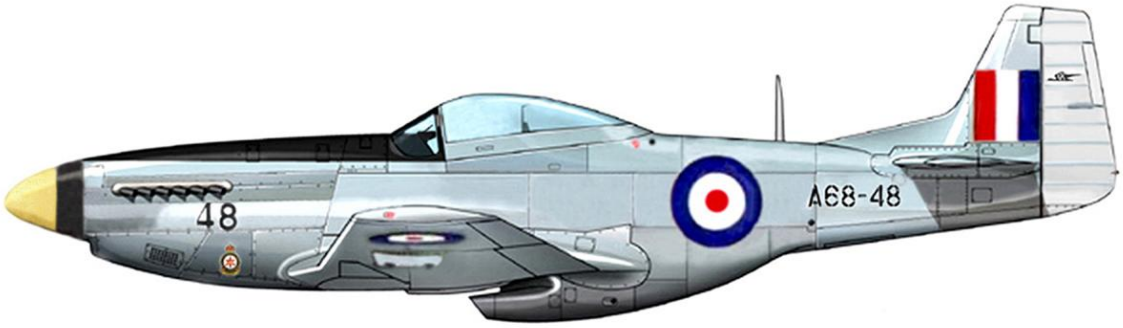


CAF SQUADRONS

A68-123 – 21 SQUADRON

A68-123 21SQN at Laverton 1954, which had previously served with 77SQN in Korea, with the red spinner of 21SQN. 21SQN carried this red squadron colour onto its Wirraways and its first Vampires. Another known 21SQN aircraft to carry these markings was A68-122. The CA-18s shown were marked on production with the red-white-blue 'type-D' markings, laid down in JAN 1948 by SIG/96 as K3/346 *Glossy Red*, and K3/343 *Glossy Blue*.

A68-48 – 22 SQUADRON



22SQN operated Mustangs from Schofields from late 1948, converting to Vampires in late 1952 and moving to Richmond, to then convert to Meteors in 1956. A68-48 was unusual in having a gold and black spinner with its last-two numbers and unit badge on nose. In its short 4-year Mustang period, at least four 22SQN aircraft had *Golden Yellow* (BSI No.56) spinners,[94] including A68-38, A68-156, A68-193 and A68-198.

A68-163 – 23 SQUADRON

23SQN had unique Squadron script, in several forms, below the exhaust stacks, and the unit Mustang spinners were bright gloss blue.

Left, **A68-163** 23SQN blue spinner, damaged in landing accident with A68-135 at Pearce on 2 AUG 1954. A68-163 has the individual letter '**W'** on the undercarriage door; other known 23SQN aircraft were A68-135/Z, A68-138/Y, A68-175/U, A68-195/S and A68-197/V.

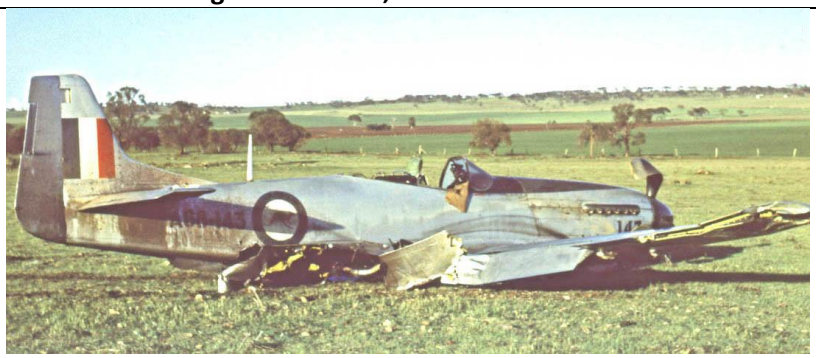
CAF SQUADRONS

24 SQUADRON

24SQN was the only CAF unit to operate the Mustang continuously, never converting to Vampires or Meteors. The unit received its first Mustangs from 1AD at Tocumwal on 16 APR 1951, and in JUN 1951 Tocumwal was directed to select four Mustang Mk.23 for allocation to 24SQN (these delivered on 26 JUL 1951: A68-127, -150, -164 and -177).[95] 24SQN operated the type until the end of 1959, with its last six aircraft disposed of on 3 MAY 1960: A68-136, -140, -150, -157, -166 and -186. Accordingly, most of the 1956 kangaroo-marked Mustangs were 24SQN.

24SQN Mustangs at their base at Mallala over 1955-56 with blue and white-tipped spinners

A68-150 with kangaroo roundel, with serial number and nose number marked in *Serif Stencil* font



A68-143 24SQN, with black/blue/white spinner and post-1956 kangaroo roundels, forced landing on 16 SEP 1958. Another 24QN aircraft with kangaroo roundels was A68-141, which incorrectly carried them in all six positions.

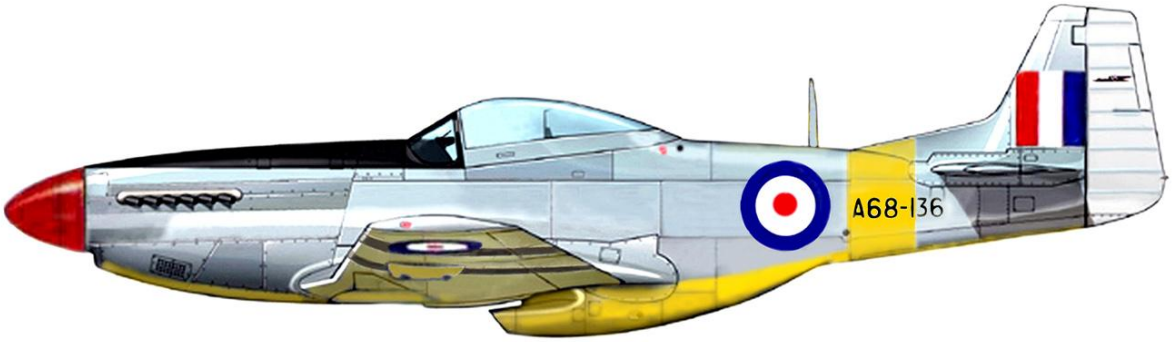
24SQN aircraft typically had *Serif Stencil* style serial numbers, with the 'last-three' repeated on both side of the nose. The black/blue/white spinner appears to have been the unit marking for at least 1955-59. Known 24SQN aircraft were: A68-123, A68-127, A68-136, A68-137, A68-140, A68-141, A68-143, A68-145, A68-150, A68-152, A68-157, A68-162, A68-164, A68-166, A68-169, A68-171, A68-177, A68-179 and A68-186.[96]

TARGET TOWING MUSTANGS

A68-113 – 10 SQUADRON TOWNSVILLE

A68-113 of 10SQN at Townsville as a target tug. 36" yellow fuselage band, yellow/black stripes, and blue spinner, 'Type-D' roundels before the introduction of the 1956 kangaroo; by 1957 the spinner was red. The Mustang towed a 1000ft target cable, attached prior to take-off to a tow point frame on the starboard bomb station.[97]

A68-136 – AAS EAST SALE



A68-136 Air Armament School, East Sale, same style of yellow/black striped undersides as A68-113, but a different interpretation of the yellow fuselage band – narrower at 27" and not centred on the roundel – with a red spinner.

Left: **A58-157 of 25SQN** Pearce (1953-56) shows a different style of undersides – more yellow/black striping than the two aircraft shown above, black tailplane and yellow elevator, and similar to A68-117 with yellow band through the roundel.

A68-124 of 25SQN (1953-56) was also similar to A58-157.

A68-152 of 2OTU Williamtown (1953-56) had the same markings as A68-136.

A68-170 of 2OTU (1954-56) also had similar markings to A68-136.

RAAF Disposals – What a Fascinating Story

1948 – Indonesia. In NOV 1948, two RAAF P-51Ds – A68-686 (44-13006) and A68-687 (44-13009) – were transferred to the NEI-AF, and subsequently absorbed into the AURI.[98] Both aircraft had been stored at 6AD Oakey, and authorised for write-off in DEC 1947. RAAF E/E.88 status cards show no record of transfer to Indonesia, only that "disposal action was completed by DAP on 15 NOV 1948". Different sources list both A68-686 and A68-687 to the US for restoration.[99]

1952 – South Korea. After 77SQN re-equipped with the Meteor in 1951, several P-51Ds at Iwakuni were gifted to South Korea's Republic of Korea Air Force (ROKAF) in NOV 1952. Seven aircraft were selected for transfer: A68-720, A68-723, A68-729, A68-760, A68-799, A68-806, and A68-808.

A68-729 transferred to the ROKAF in NOV 1952 as '8', retaining its 77SQN spinner colours

ROKAF Mustangs – as 77SQN had re-equipped, in late 1952 RAAF P-51Ds were prepared for transfer to the ROKAF

It appears of the seven, only two (**A68-723** and **A68-729**) were actually officially handed over to the ROKAF by Minister for Air Billy McMahon on 26 NOV 1952. These two are documented in the AWM photo collection – but the E/E.88 status cards vary. **A68-806** was prepared to be ready for handover according to its E/E.88, but this was evidently cancelled. The remaining aircraft were held in storage awaiting ROKAF notification to transfer, and they might even have been prepared in ROKAF colours. However, eventually the Koreans determined these were surplus to their requirements and the aircraft were "disposed of locally" at Iwakuni, and scrapped in late 1953.[100]

1953 – American Aeronautics. 35 RAAF P-51Ds were sold in FEB 1953 to a US aircraft broker American Aeronautics Corporation, of Burbank, California.[101] Of the 35 airframes, some of which had been sold as fuselages only, 25 received US civilian registrations in the N4674V to N4699V block. Known serials are:[102]

RAAF Serial	US 'N' Registration	RAAF Serial	US 'N' Registration
A68-813	N4674V	A68-804	N4687V
A68-810	N4675V	A68-632	N4688V
A68-756	N4676V	A68-675	N4689V
A68-792	N4677V	A68-672	N4690V
A68-780	N4678V	A68-634	N4691V
A68-716	N4679V	A68-667	N4692V
n.k.	N4680V possibly not used	A68-641	N4693V
A68-706	N4681V	A68-656	N4694V
A68-763	N4682V	A68-643	N4695V
A68-731	N4683V	A68-673	N4696V
A68-709	N4684V	A68-661	N4697V
A68-732	N4685V	A68-671	N4698V
A68-801	N4686V	A68-669	N4699V

The other ten aircraft sold to **American Aeronautics** than did not receive US registrations were: A68-663, -664, -665, -666, -668, -725, -734, -736, -739 and -741.

1955 – Bolivia. Of the American Aeronautics aircraft that had been transferred to California, four (all with ex-USAAF 45- serial numbers) were transferred in FEB 1955 to Bolivia's air arm, the FAB: A68-801 (45-11458) as FAB-501, A68-804 (45-11464) as FAB-502, A68-813 (45-11483) as FAB-503, and A68-810 (45-11479) as FAB-503.[103] This deal has been described as: "*Bolivia acquired its earliest examples through the slippery and shadowed post-war surplus market*"! [104]
The President of American Aeronautics was Gordon Strube, who then in 1957 founded Consolidated Aeronautics Corporation. Some details of a 1957 legal action regarding the Bolivia deal with American Aeronautics is attached.[105]

Bolivian FAB-504 ex A68-801

A later Bolivian P-51D FAB-511 (not ex RAAF)

1960 – Tocumwal. Meanwhile at home, as Vampire and Meteor jets equipped the five CAF squadrons through the 1950s, Mustangs became available for disposal. Of the 200 CAC-built aircraft, about a half were scrapped at Tocumwal. Noted there over 1960-61 were A68-124, -133, -139, -144, -147, -149, -155, -158, -159, -162 (kangaroo roundels), -164, -165, and -171; as well A68-105, A68-119 and A68-193 were released from storage to purchasers.[106]

1968 – Emu Mustangs. Six Mustangs were flown from Tocumwal into Emu, South Australia, in 1953 as samples for atomic testing effects. The six aircraft recovered from the test site at Emu were exported to the US in 1968, with most acquired by Cavalier Aviation for reduction to spares: A68-1 (flying as N51WB "A68-1001"), A68-7, A68-30, A68-35, A68-72 and A68-87.[107]

Subsequent Overseas Acquisitions. Several other CAC aircraft were exported and never registered on the Australian civil register: A68-175 (CF-WWH, N64824, N51DT), and A68-198 (N4674V, N286JB).

Some NAA aircraft were exported: A68-674 to NZ as ZK-SAS (had an Australian allocation not taken up of VH-CVA, and a US registration N9200N), and A68-679 to US as N71FT. Below is a table of ex-RAAF Mustangs that made the Australian civil register, with ***** indicating current flyers in Australia.

Always immaculate, Jeff Trappett's A68-118 VH-AGJ "ECLAT" *

CIVIL REGISTER – MUSTANGS WITH VH- REGISTRATIONS

Ex-RAAF Mustangs on the civil register – in the 1950s-60s bright colours, now military schemes

A68-1 VH-EMQ, to US as "A68-1001" N51WB

A68-5 VH-BVM (England-NZ Air Race, No.7) / G-ARKD

A68-39 VH-BOY as a target tower / later N551D

A68-100 VH-BOW / N51AB

A68-104 VH-BOB*

A68-105 VH-JUC as KH677 CV-P*

A68-107 VH-AUB*

A68-110 VH-MFT as A68-769 FA-◊*

CIVIL REGISTER – MUSTANGS WITH VH- REGISTRATIONS

A68-113 VH-UWB / G-ARUK

A68-118 VH-WAS / VH-AGJ*

A68-119 VH-IVI

A68-187 VH-UFO

A68-192 VH-FCB / G-HAEC / D-FBBD

A68-193 VH-DBB

A68-198 not VH-, in USA as N286JB, F-AZIE, N286JB

A68-199 as target tower VH-BOZ / VH-URZ*

Another brilliant restoration, the RAAF Museum's A68-170 (VH-SVU) marked as A68-750 AM-G*

PLATINUM
FIGHTER SALES

FOR SALE

1951 C.A.C Mustang
A68-199
US$1,599,000 No G.S.T.

History:
A68-199 is the youngest factory built Mustang (1951) in existence with A68-200 being totally destroyed during RAAF service. 199 is probably best known whilst owned and operated by Fawcett Aviation/Illawarra Flying School of Bankstown, NSW during the 1960s - 70s as a military Target Tug in company with sister ship A68-39 VH-BOY.

Manufacturer:	Commonwealth Aircraft Corporation (C.A.C.), Victoria, Australia
Model:	CA-18 Mk 22 Mustang
Construction No:	1424
RAAF No:	A68-199
Year built:	1951
Registration:	VH-URZ (formerly VH-BOZ)
Airframe:	1371.3 Hrs T.T. 4.5 Hrs since first post I.R.A.N. flight 16/12/16
Engine:	Packard V-1650-7 Merlin. 4.5 Hrs S.M.O.H by 51 Factory, USA
Propeller:	Hamilton Standard 24D50. 4.5 Hrs S.M.O.H by Safe Air Aus
Airworthy:	Yes
In Annual:	Yes
Location:	Tyabb, Vic, Australia

For complete specifications please contact:

John Rayner AUS +61 418 311 686
john@platinumfighters.com

Simon Brown USA +1 951 258 4205
simon@platinumfighters.com

www.platinumfighters.com

De HAVILLAND D.H.98 MOSQUITO

The first RAAF operational Mosquitoes in Australia were UK-provided camouflaged FB.VI ground attack fighter-bombers for 1SQN (A52-500 to A52-537) and 87SQN photo-reconn PR.XVIs (A52-600 to A52-622). Within months of receiving the FB.VIs, in MAR 1945 1SQN was respraying them in *Aluminium*[108] – RAAF *Aluminium K3/168* was bright and smooth, quite unlike the RAF *Dull Aluminium*.[109] Australian production of the FB.VI was the FB.40 (A52-1 to A52-212), powered by the single-stage Packard Merlin 31 (and later Merlin 33), six were modified as reconnaissance aircraft as the PR.40. However, a two-stage Merlin was required for high altitude longer-range missions, so the RAAF's main photographic aircraft for postwar service became a major upgrade of the FB.40 – the PR.41 (A52-300 to A52-327) powered by the two-stage Merlin 69. As well, UK-provided trainers were the T.III (A52-1002 to A52-1015), and again FB.40s were modified at Bankstown as T.43s (A52-1050 to A52-1071).

Bankstown-produced Mosquito FB.40 A52-92 delivered MAY 1945 – all Australian variants had six exhaust stubs

Australian production FB.40s were initially camouflaged, but as A52-92 shows, production switched over to overall *Aluminium*. The RAAF had approved the new scheme to DH of *Aluminium* S-13809 (presumably the BALM colour for K3/168) for non-PR Mosquitoes, in MAR 1945.[110] FB.40s were marked with the contemporary 2:5 'Pacific' national markings – no roundels were carried under the wings, upper roundels were 54"-diameter.[111] Because of the remarkable multi-role combat capability of the Mosquito, it was a superb long-range reconnaissance platform. The postwar role for the Mosquito in the RAAF would be photographic – primarily for photographic survey in the mapping of Australia, but also with a tactical reconnaissance capability, a role shared with the Mustang Mk.22.

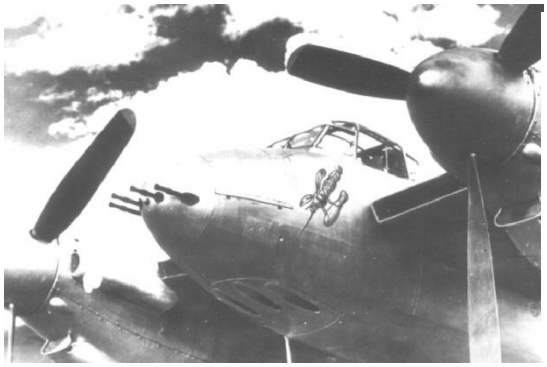
FEB 1945 – Recommendation to DCAS by de Havilland that the Mosquito in tropical areas should be covered in silver dope.[112] This was then approved by RAAF HQ DTS the following month,[113] formalised as **DTS SIG/52/36** the next week on 9 MAR 1945,[114] and implemented immediately on 1SQN Mosquito FB.VI aircraft.

Serial Number	Serial Policy	Aircraft Mark	Remarks
A52-1 to A52-212 A52-300 to -327 A52-500 to -537 A52-600 to -622 A52-1001 A52-1002 to -1015 A52-1050 to -1071	Consecutive Block Block Block Prototype Block Block	Mosquito FB.40 Mosquito PR.41 Mosquito FB.VI Mosquito PR.XVI Mosquito F.II Mosquito T.III Mosquito T.43	Australian production at Bankstown were allocated mark numbers commencing with '40': FB.40 fighter-bomber (similar to UK FB.VI); PR.41 photo aircraft modified from FB.40 production; FB.42 one-off modified FB.40 with two-stage engines, not required; T.43 trainers modified from FB.40 production.

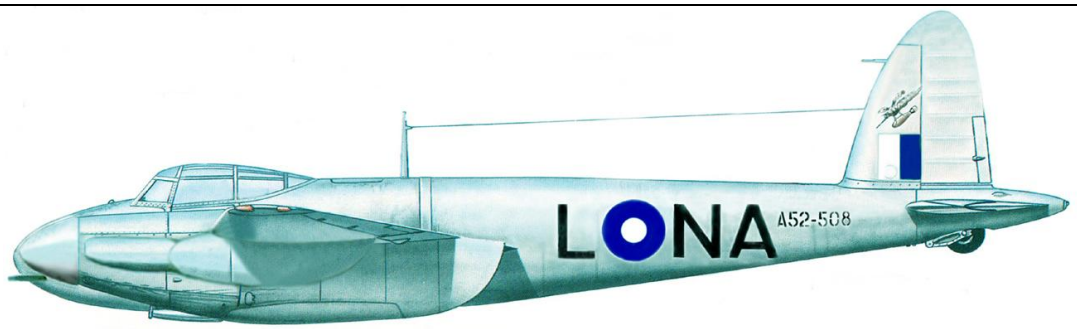
1945 – 1 SQUADRON SILVER MOSQUITOES

The Mosquito FB.VI aircraft for 1SQN arrived camouflaged from UK, by MAR 1945 were being re-painted in *Aluminium* (K3/168) by the Squadron – the first was completed on 24 MAR 1945 [115] – with serial numbers and the 'NA' squadron codes applied in black, and some aircraft had a dive-bombing mosquito on the tail, or on the nose.

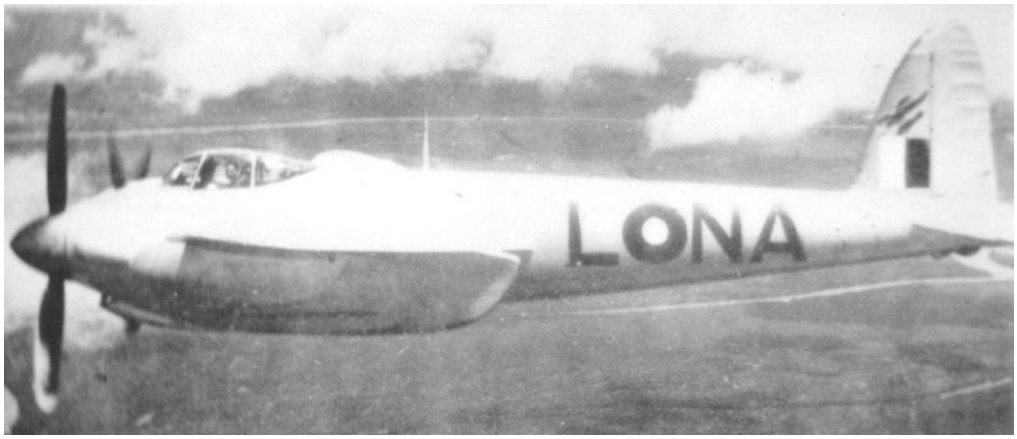
A52-511 NA-G at Labuan late 1945 with unidentified 77SQN Mustang AM-R



1945 1SQN's dive-bombing Mosquito marking on the nose of A52-500 NA-A, and fin of A52-508 NA-L



A52-508 NA-L Northern Borneo 1945



National Markings were 32" roundels on the fuselage and upper wing surfaces, no underwing roundels.[116] Other known 1SQN codes were: A52-500 NA-A, A52-504 NA-P, A52-506 NA-N, A52-507 NA-X, A52-510 NA-H, A52-511 NA-G, A52-513 NA-M, A52-518 NA-Y, A52-520 NA-B, A52-522 NA-O, A52-525 NA-J, A52-526 NA-E and A52-528.[117]

Photo Reconn Mosquitoes

The UK Mosquito PR.XVIs, delivered from late 1944, had "handed" two-stage Merlins for the engine attached ancilliaries – i.e. the left-hand Merlin 77 on the port, the right-hand Merlin 76 starboard.[118] The Mosquito's airframe allowed sufficient flexibility to fit an array of vertical and oblique cameras for survey and reconnaissance missions. A **vertical** camera, as the term implies, is mounted directly downwards for scaled use in reconnaissance, and in particular survey mapping. Two vertical cameras could be used together as **"split verticals"** to provide overlap for stereographic interpretation.

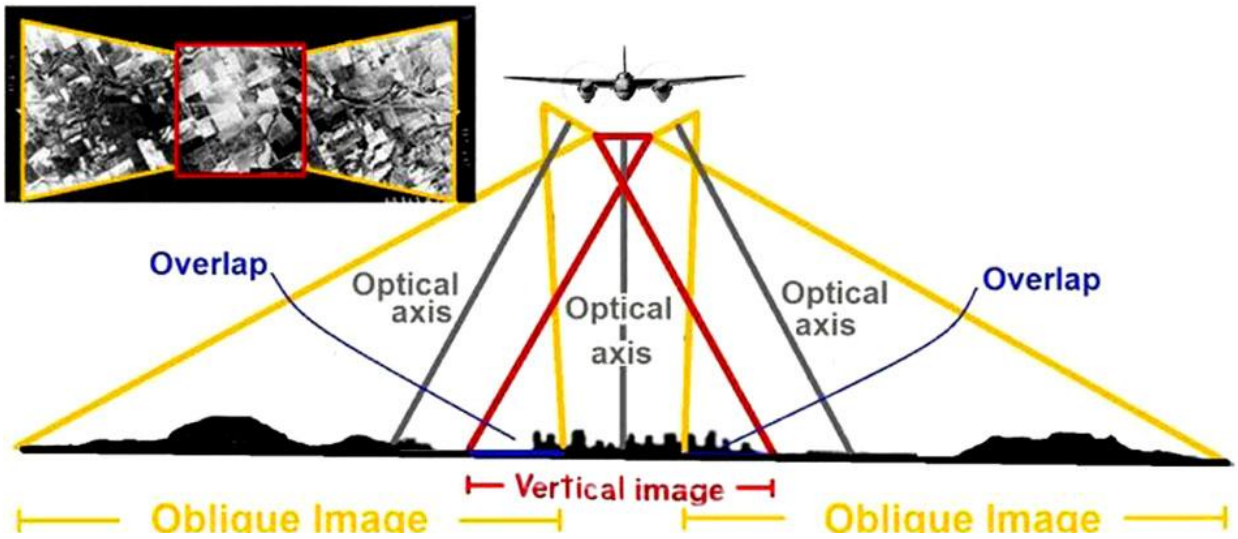
An **oblique** camera is mounted at an angle between the horizon and the vertical, to provide forward or sideways imagery for tactical photographic interpretation. The UK cameras in RAAF use at this stage were the F24 and larger F52, which could be fitted with a selection of lenses and mounted for vertical or oblique photography. US cameras were available to the RAAF, from the operation of the Coomalie Creek 1PRU photo reconnaissance F-4 Lightnings – these were the K-17 and K-18. The fit for the RAAF Mosquito PR.41 allowed for a variety of these cameras for a mission. Another variation of this was for the K-17 **tri-metrogon** with three cameras in a single assembly – one camera pointed vertically, and the other two pointed either side of the flightpath and depressed from the horizon (typically 30 degrees), for stereo interpretation.

RAF Mosquito PR.XVI – F24 14" vertical and F24 14" oblique cameras, two F52 verticals with 20" lenses

Aerial Cameras

British aerial cameras had traditionally been used by the RAAF before the arrival of US equipment – the F24 5" x 5" square format (with a magazine for up to 250 images), and the larger F52 10" x 7" format (with a 300 magazine), both with a variety of lenses from 5" focal length, up to the long 36" for the F52. These in fact remained after the Mosquito, for use with the Canberra.

The British **PR.XVI** was fitted with US K-17 9” x 9” format (200 magazine) with 6” and 12” lenses;[119] the **PR.40** with the K-18 18” x 9” format with 24” lens; and the **PR.41** with both those K-17 cameras, and the F52 20” or 36” mounted in the rear fuselage which could be used a split verticals.



A simple vertical photographic calculation for working out a height to fly to obtain a certain ground coverage, with a specific focal length lens and camera format is given by:

W x H = L x F

- **W** is the width of camera plate format, either in direction of flight or across track (in inches);
- **H** is the height (above ground level, AGL, in feet);
- **L** is the length of the ground coverage (in feet); and
- **F** is the lens focal length (in inches).

In the simplest case of an F24 aerial camera (which has a 5” x 5” format), fitted with a 5” lens, then the height in feet AGL equals the ground coverage distance. That is for vertical photography, if the aircraft is 5000ft AGL, then the camera coverage of one exposure would be 5000ft on the ground – and as the F24 has a square 5” camera format, that translates as a square image 5000ft along track, and 5000ft across track.

Mosquito PR.41 Aerial Camera Fits [120]

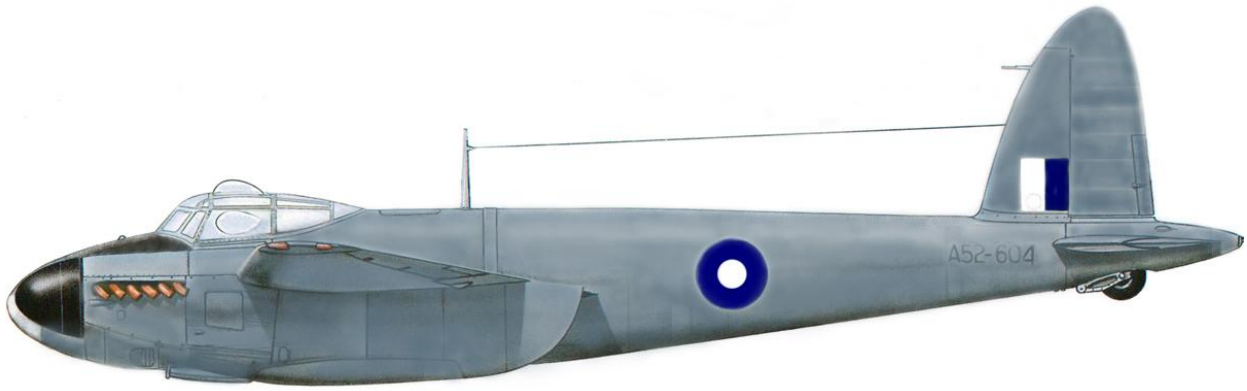
Camera Station	Mount	Camera	Remarks
Nose	vertical tri-metrogon	**K-17** 6”/12” lens	10.4” diameter window
2 x Rear Obliques	port and stbd obliques	**K-17** 6”/12” lens	10.4” diameter windows
Rear Fuselage - Forward	vertical	**F52** 20” or 36” lens	10.4” diameter window
Rear Fuselage - Aft	vertical	**F52** 36” lens	13.4” diameter window

British aerial cameras – F24 left 5” x 5” format, F52 10” x 7” format

The US K-17 camera 9” x 9” format 12” lens

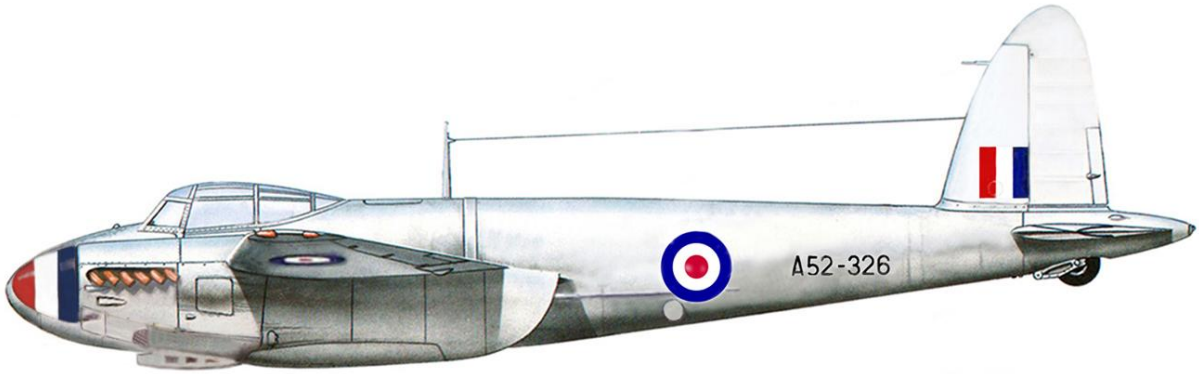
PHOTO RECONN MOSQUITOES

RAAF Australian-sourced *PRU Blue* was **K3**/324, the equivalent of the British standard BSI No.103.[121] As shown on A52-604 (below) in MAY 1945, Australian *PRU Blue* was an excellent match for the original RAF colour 33B/494 (which became BS381C-636), so re-marking of these aircraft left no tell-tale signs of painting touch-ups.[122]



Fading *PRU Blue* on Mosquito PR.XVI A52-604 1945, Pacific 2:5 roundels, no underwing roundels

RAF *PRU Blue* 33B/494 (BSI No.103), later given the 'grey' designator BS381C-636



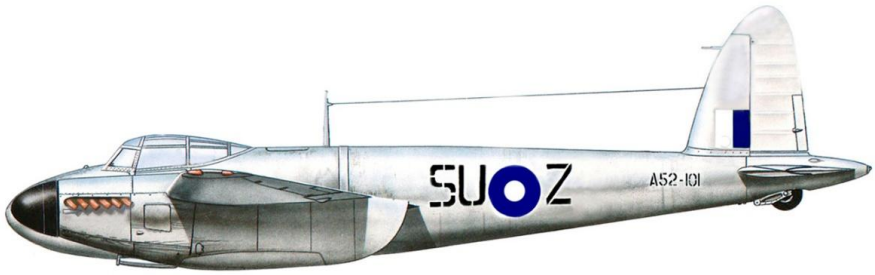
Aluminium PR.41 A52-326 1951, 'Type-D' National Markings, underwing roundels, red-white-blue spinners, supercharged Merlin 69 engines. The PR.41 had longitudinal strengtheners for the comprehensive vertical/oblique camera fits; the main camera fuselage bay was in the rear fuselage between bulkheads 4 and 5.

A postwar 87SQN Mosquito PR.41 fitted with a nose K-17

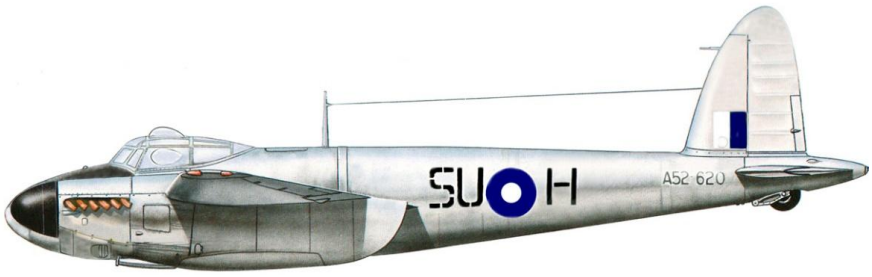
87SQN Badge

SURVEY SQUADRON / 87 SQUADRON – SILVER MOSQUITOES

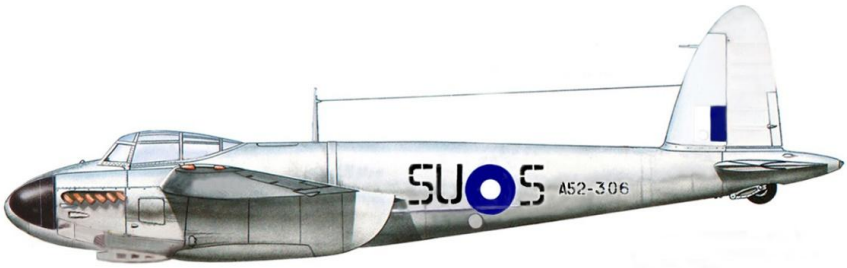
87(PR)SQN 1944-46, Survey SQN 1946-48, 87(Survey) SQN 1948-49, 87(PR)SQN 1949-53



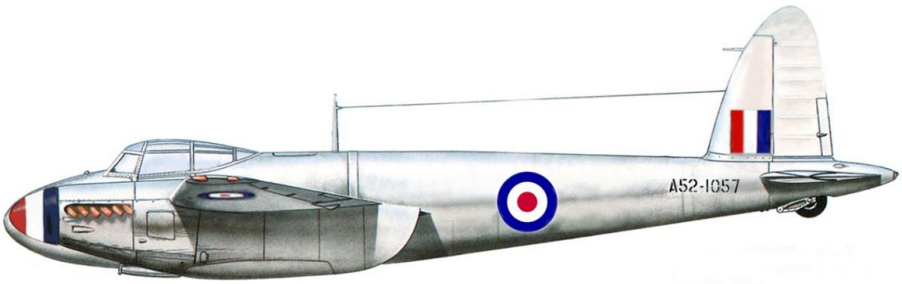
FB.40 A52-101 SU-Z late 1946 "Suzie", 2:5 roundels, black spinners, no underwing roundels, upper roundels 54".[123]



PR.XVI A52-620 SU-H 1947-8 – initially delivered from 1944 in *PRU Blue*, *Aluminium* from 1946 – 2:5 roundels, black spinners and glare panel, bomber-style cockpit and nose. Known SU PR.XVIs: A52-600 (SU-A), A52-603 SU-B, A52-608 SU-D, A52-610 SU-E, A52-619 SU-G. Two-stage supercharged Merlin 76 (starboard) and 77 (port) engines.



PR.41 A52-306 SU-S 1948 – Pacific 2:5 roundels, black spinners, high altitude two-stage supercharged Merlin 69 engines, longitudinal stiffeners to strengthen for comprehensive vertical/oblique camera fits.

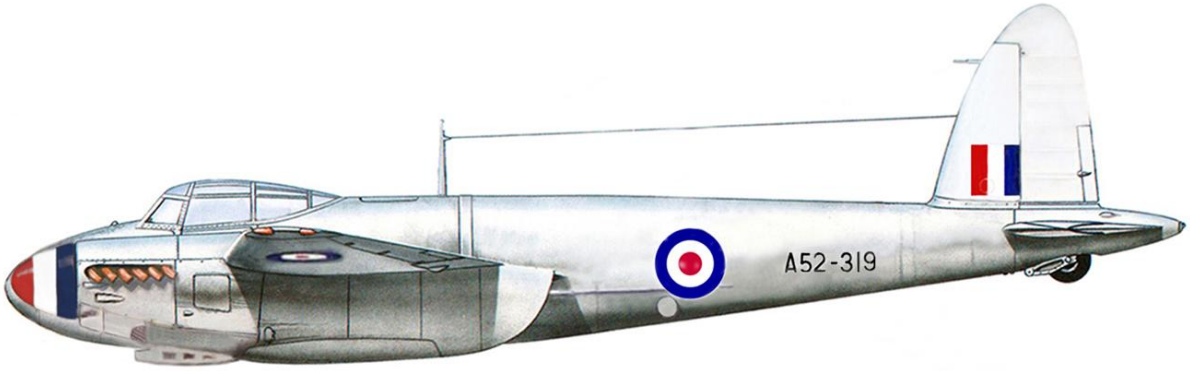


T.43 A52-1057 87(PR)SQN 1951, Fairbairn, 'Type-D' national markings, red-white-blue spinners, Merlin 31 engines.

PR.41 A52-326 1951 at Laverton, 'Type-D'-roundels, 87SQN badge – red-white-blue spinners (also -301, -302, -306).

MOSQUITO PR.41 A52-319

Aluminium PR.41 A52-319 as it appears on display at the AWM. Like other Mk.41 aircraft, A52-319 was originally produced as an FB.40 (A52-210). While many 87SQN Mosquitoes were marked with red-white-blue spinners in the early 1950s, A52-319 was never on 87SQN strength, being stored from delivery in 1948 until being sold five years later. AWM displays it in post-1948 National Markings of 'Type-D' roundels and fin flash, and underwing roundels.



A52-319 was registered as VH-WAD *'The Quokka'* in SEP 1953, the Mosquito was entered into the England to NZ Air Race with Race Number '8',[124] but lack of sponsorship saw it withdraw and then languish at Perth airport for many years, where it deteriorated rapidly, until finally acquired by the AWM in 1979.

PR.41 A52-319, ex VH-WAD, acquired by the AWM in 1979 on display in the Air Power Hall

Disposals

The Mosquito was withdrawn from 87SQN in 1953, ending this multi-role combat aircraft's RAAF service. Several Australian-produced Mosquitoes were passed on the RNZAF, a few made it on to the Australian and US civil registers, and two remain for our viewing pleasure today.

New Zealand. Several ex-RAAF Mosquitoes were issued to the RNZAF. Firstly, in 1946 four T.IIIs were transferred: A52-1015, 1006, 1005, 1003 (as NZ2301-04). This was followed by an FB.40 after a landing mishap in Auckland in early 1947: A52-101 gifted as NZ2320. And finally, also in 1947 we were able to infiltrate some Australian-produced aircraft into New Zealand: four T.43s A52-1051 to A52-1054 as NZ2305-08.

Civil Register. The following five Australian-produced Mosquitoes made it onto civil registers:

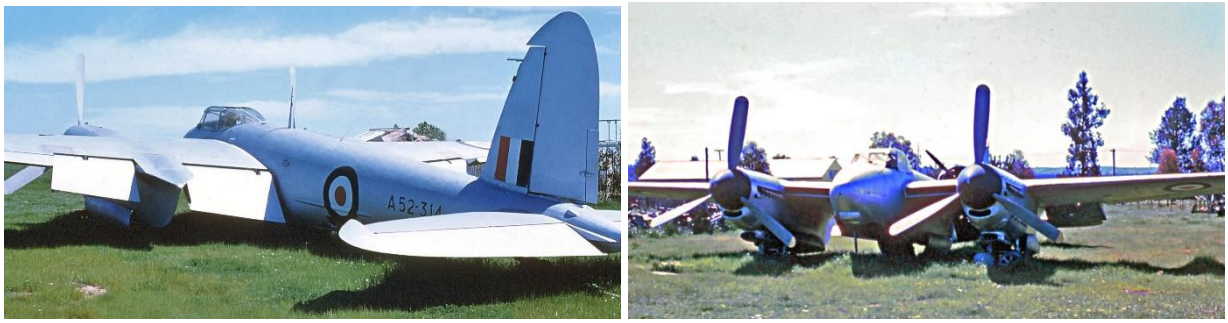
- **A52-177** sold to US JAN 1953, reg **N4928V**, modified DF loop from canopy, flown to California;
- **A52-306** sold to World-Wide Surveys MAY 1954 as **N1596V**, Labuan survey, then **VH- WWS** NOV 1956;
- **A52-313** sold to World-Wide Surveys MAY 1954 as **N1597V,** Labuan survey, destroyed Camden 1958.
- **A52-319** sold MAR 1953, SEP 1953 **VH-WAD** for England-NZ Race (No.8) withdrawn, sold to AWM 1979, display.
- **A52-324** free issue OCT 1952 for England-NZ Air Race (No.6), SEP 1953 to **VH-KLG,** ditched off Burma OCT 1953.

Also **A52-600** (at one time the registration **VH-JUC** was reserved) is undergoing restoration at the RAAF Museum.

A52-177 FB.40 N4928V in 1953 at Canton Island on ferry to USA [125]

A52-313 PR.41 N1597V at Labuan, Borneo, during survey JUN-SEP 1954

Scrapping. Mosquito aircraft known to have been scrapped at Tocumwal in the early 1960s are: PR.41s A52-300, -301, -302, -305, 307, -308, -310, -325 and -326; with T.43s A52-1056, -1057, -1058 and -1062.[126]



Mosquito PR.41 A52-314 scrapped at Wagga in 1961

CONSOLIDATED PBY / PB2B CATALINA

A24-350 in RAF Coastal Command colours, on a 1945 test flight in California prior to delivery to Australia

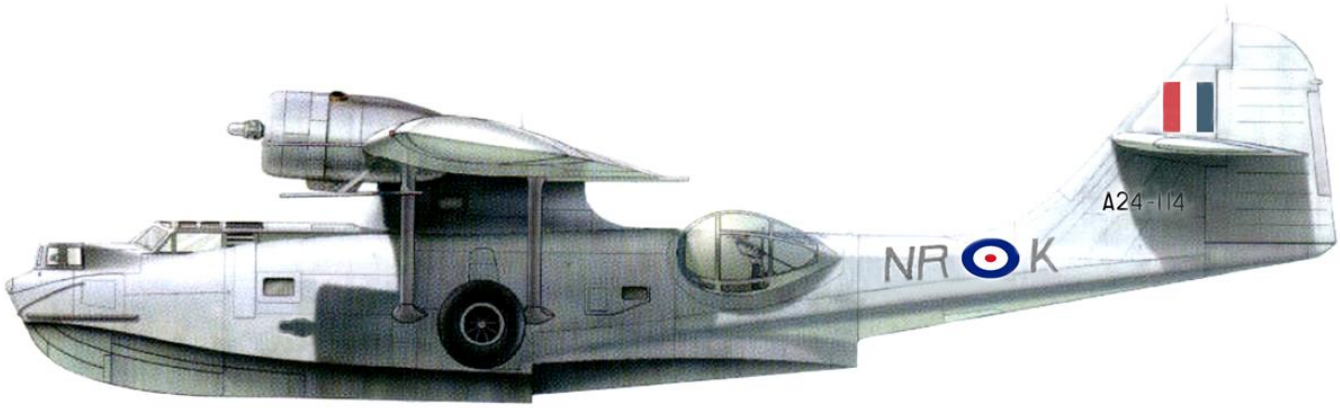
WWII Catalina deliveries were in tactical colours of sea camouflage or black Night schemes. However, some Lend-Lease PB2B-2 Catalinas delivered immediately postwar – A24-350 (JX661), A24-367 (JZ839) and A24-386 (JX634) – were received in RAF wartime Coastal Command colours of *Extra Dark Sea Grey* and *White*, with RAF 'Type-C1' roundels, but with red roundel centre overpainted by white![127]

11SQN PB2B-2 Catalina A24-352 over Sydney JAN 1949

In OCT 1945, RAAF Headquarters directed that camouflage could be removed from Catalinas in lieu of the current *Foliage Green* for ASR aircraft,[128] then followed by RAAF directive DTS SIG/71 in NOV 1945 for all aircraft to have camouflage removed during major overhaul.[129] The SIG/71 directive of late 1945 would not immediately see all RAAF Catalinas stripped back to bare metal, as some Catalinas of 113 ASR Flight at Iwakuni still had camouflage over FEB-APR 1946. *Catalina Chronicle* provides some details of the RAAF ASR Flights.[130] One PBY-5A shown below was marked with 'NR' squadron codes as NR-K, and once established at Iwakuni in early 1946 inherited the BCAIR red-white-blue 'Type-A' 1:3:5 markings. This was a PBY-5A, as amphibians were required for Iwakuni operation, and appears to have been A24-114. Other known 113ASRF PBY-5A Catalinas were *Foliage Green* A24-104 NR-H, A24-112 NR-B, and A24-113 NR-F in 1946. Also a *Coastal Command White* PB2B-2 A24-367 NR-E was flown over 1945-46.

A24-114 – PBY-5A CATALINA WITH BCAIR ROUNDELS

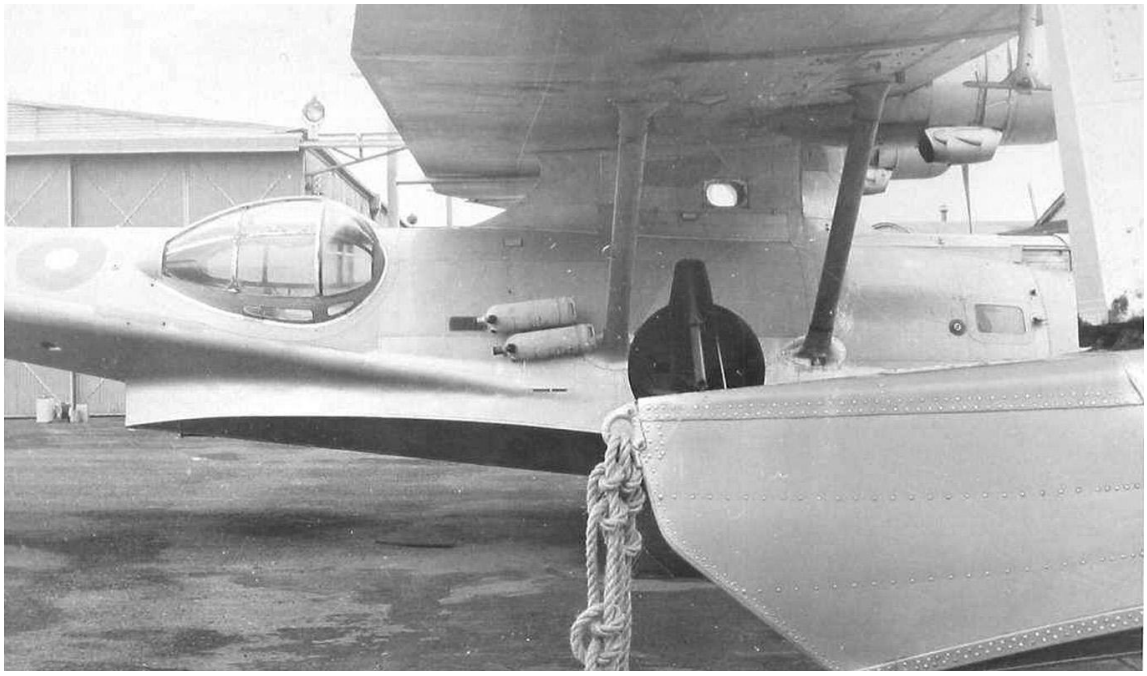
1946 – A24-114 PBY-5A NR-K of 113 ASR FLT at Iwakuni, BCAIR roundels, supporting 81WG cMAR 1946



PB2B-2 flying boat A24-367 NR-E, 113 ASR FLT, DEC 1945

Postwar in Australia, the main Catalina operator became 11SQN. The wartime 11SQN had disbanded at Rathmines in JAN 1946, and then in JUL 1948 the Rathmines SAR Wing was renamed 11(General Reconnaissance) SQN, with SAR detachments around Australian coastal bases. Aircraft on strength in JUL 1948 included: PBY-5As A24-92, A24-104 and A24-110; and PB2B-2 A24-380, A24-381 and A24-385.[131] While colours were bright *Aluminium*-pigmented cellulose enamel (K3/162) and dope (K3/168), silver Catalinas had a *Medium Sea Grey* (K3/183) hull. [132]

An interesting silver PBY-5A Catalina was A24-104. This was used for jet-assisted JATO trials at ARDU over JAN-NOV 1948, and below is A24-104 in early 1948, still with Pacific 2:5 roundels. This is before its markings were changed to the newly-introduced 'Type-D' 1:2:3 national markings (introduced by RAAF SIG/96 in JAN 1948), which in later wore from about AUG 1948 for the completion of the trial.



A24-104 with JATO bottle trials attached 'Pacific' roundel, c MAY-JUN 1948

Included in the A24-104 JATO trials was preparation for upcoming Antarctic Expeditions. In AUG 1948, A24-104 departed Hobart for Macquarie Island on "Operation SINBAD", with a landing at Macquarie Island in rough seas. These conditions necessitated a JATO take-off, and a return to Rathmines via RNZAF Base Wigram (Christchurch). In SEP 1948 A24-104 returned to ARDU for completion of the JATO trials program.[133] VH-EXG, not ex-RAAF but ex-RCAF, was acquired by the RAAFM in 1989, the fuselage was restored at Amberley, and is now marked as **A24-104** at Point Cook.

By 1949, a WGCDR's pennant had been added to A24-104, when with 11SQN at Rathmines50, before the unit disbanded in MAY 1950. 11SQN then re-formed flying Lincolns in preparation for the arrival in 1951 of P2V-5 Neptunes at Pearce.

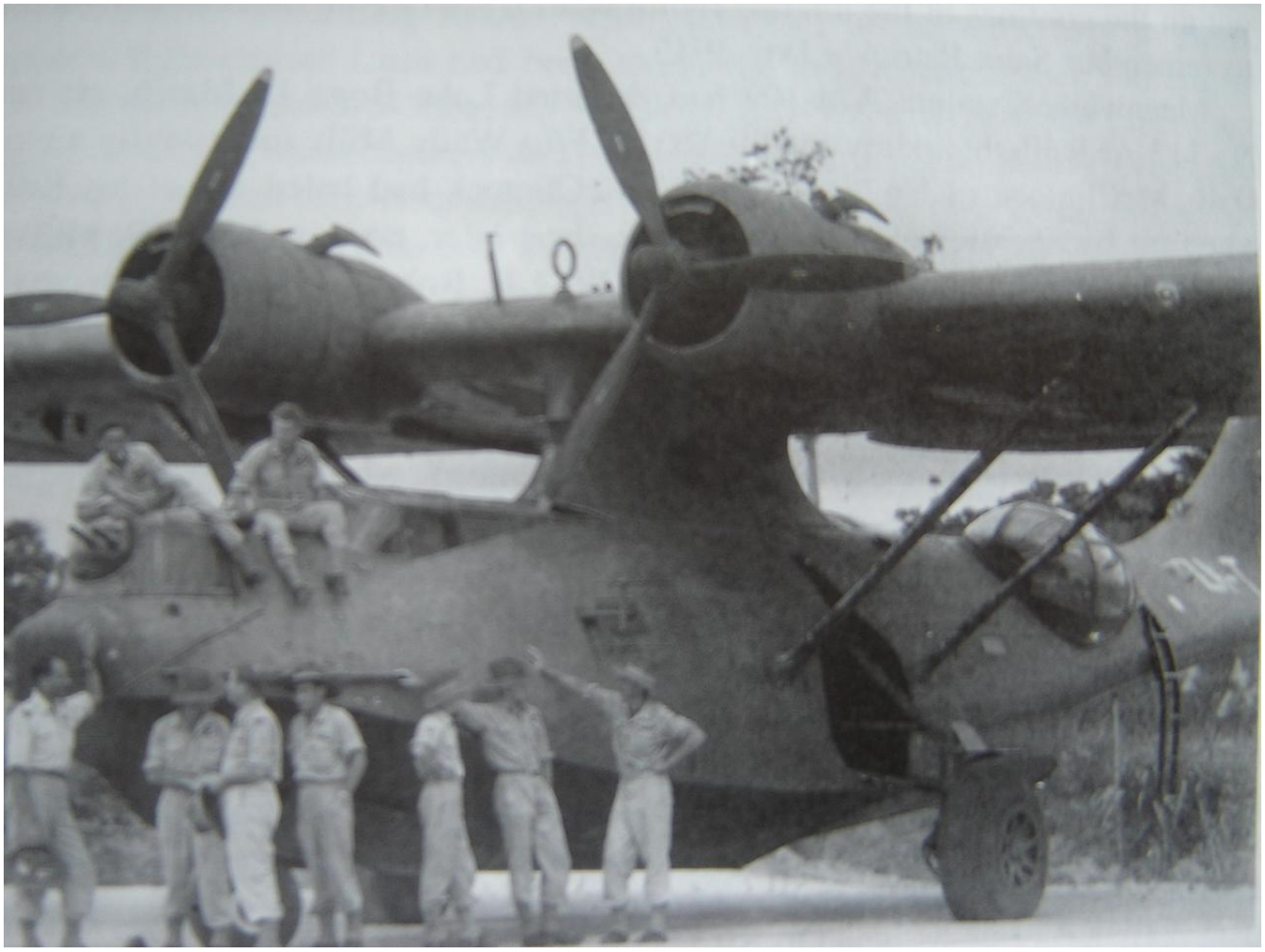
11SQN PBY-5A Catalina A24-92 at Nowra in 1951

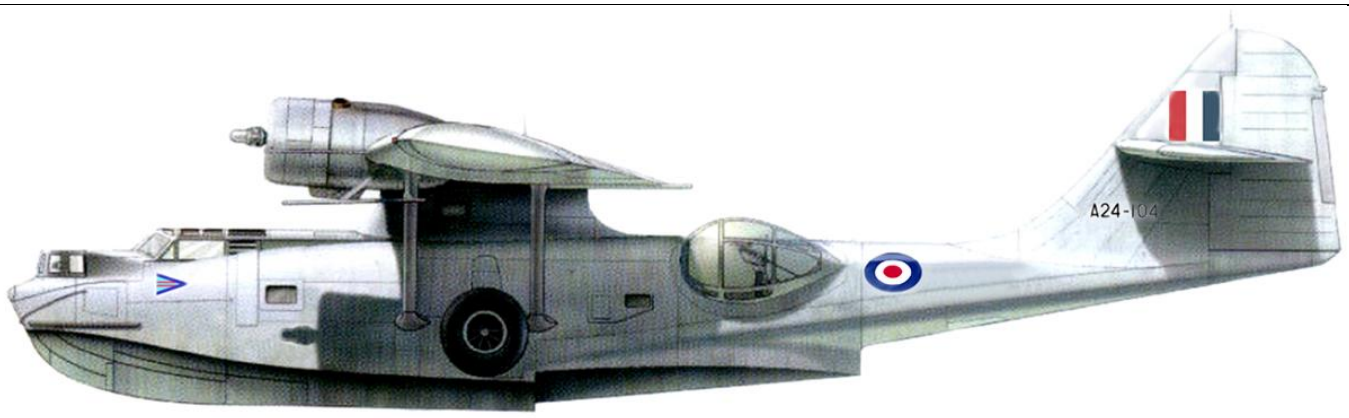
Serial Number	Serial Policy	Aircraft Mark	Remarks
A24-1 to A24-114	Consecutive	PBY-5, -5A, -5A(M)	PBY-5 was a flying boat, PBY-5A was an amphibian.
A24-200 to -206	Block	PB2B-1	As the alighting gear was not required for the 'Black
A24-300 to -309	Block	PB2B-2	Cat' long-range sorties it was removed, to be PBY-
A24-350 to -386	Block	PB2B-2	5A(M). PB2B boats were made by Boeing Canada.

A24-104 – A LONG-SERVING PBY-5A CATALINA

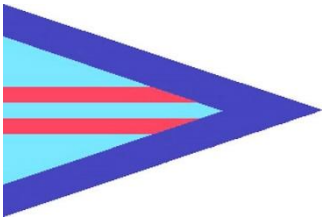
1949 – 11SQN PBY-5A Catalina A24-104 at Rathmines

A24-104 had served with 8CU as ZA-T, and then 113 ASR FLT as NR-H, before the JATO trials in 1948. In 1953 it was presented to the NEI as 16-220. VH-EXG is being restored by RAAF Museum Point Cook as *Foliage Green* A24-104 per below during wartime service.





Type-D Roundel 1948-1953



WGCDR pennant for CO 11SQN

Hull K3/183 *Medium Sea Grey*

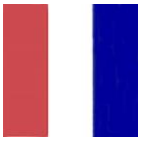
Roundel sizes, diameter inches (cm): fuselage 36" (91.44cm), mainplanes 36" (91.44cm)
Fin flash: 24" wide (8" each colour) x 24" high

A24-104 at Rathmines c1949, in bright *Aluminium*-pigmented cellulose enamel (K3/162), except for *Medium Sea Grey* (K3/183) hull, and perhaps a little further up the sides.[134]

A24-352 – A POSTWAR PB2B-2 CATALINA

1949 – 11SQN PB2B-2 Catalina A24-352 over Sydney

Type-D Roundel 1948-1953



Rudder Flash

24" wide x 24" high [135]

K3/187 *Extra Dark Sea Grey*

PB2B-2s A24-350, A24-367 and A24-386 retained their RAF Coastal Command delivery colours of *Extra Dark Sea Grey* and *White*.[136]

Roundel sizes, diameter inches (cm): fuselage 36" (91.44m), mainplanes 36" (91.44cm)
Fin flash: 24" wide (8" each colour) x 24" high

PBY-5A A24-109 – c1950 with slightly different markings, with serial number moved from the fin to beside roundel

Catalina Disposals

By 1952, the Catalina was surplus to RAAF requirements and the final survivors were offered for disposal, many for scrap metal use only. Several had already been released over 1947-48 flying on the civil register with QANTAS and Barrier Reef Airways, but most sold over 1952 were scrapped.[137]

The most famous surplus RAAF Catalina was **PB2B-2 A24-385** which was acquired from Rathmines in 1950 by Capt P G Taylor as **VH-ASA *Frigate Bird II***, and is now held at Sydney's Powerhouse Museum.

VH-EXG, (ex-RCAF c/n CV-369) flew on mineral survey, until being acquired in 1989 by the RAAFM – the fuselage was restored at Amberley, and VH-EXG is now marked as **A24-104 NR-H** at Point Cook. HARS at Albion Park fly PBY-6A (ex-USN 46679) as **VH-PBZ**, marked as **A24-362 OX-V**.

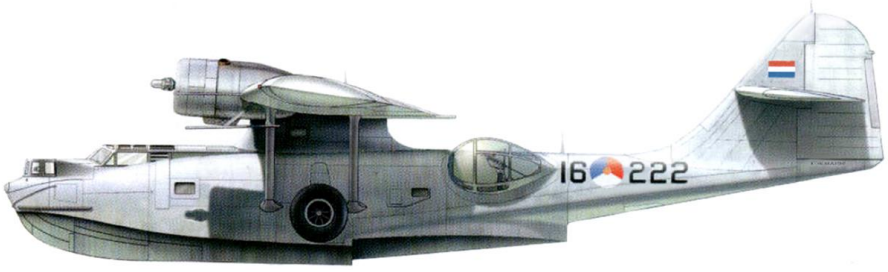
RAAF CATALINAS FOR NEI

<u>Four PB2B-2s</u> (P-207 to P-210, later 16-207 to 16-210 1952) sold to the Dutch MLD (naval aviation) in NEI over 1947-48: A24-351 (Bu 44286) to **P-208** 1947; A24-358 (Bu 44266) to **P-207** 1947; A24-366 (Bu 44264) to **P-210** 1948; and A24-384 (Bu 44293) to **P-209** 1947. The Dutch **P-**registrations were later changed to **16-** prefixes c 1952.

A24-112 at Bankstown in 1953 in preparation for issue to the Dutch Navy as 16-225

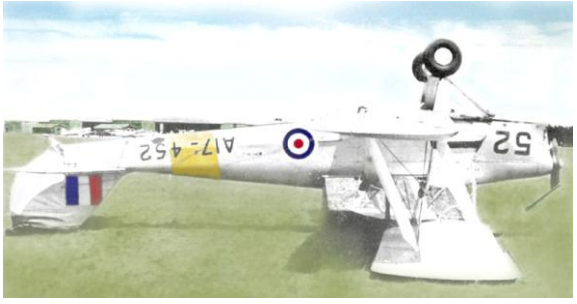
<u>Six PBY-5As</u> (16-220 to 16-225) donated to the Dutch Navy in Indonesia over 1953-54, and were marked as 'Kon Marine' (*Royal Navy*): A24-92 transferred to Dutch Navy as **16-223** MAY 53; A24-99 as **16-224** 1953; A24-104 to **16-220** FEB 1954; A24-110 as **16-221** 1953, A24-111 in 1953 as **16-222;** A24-112 in 1953 as **P-225**

A24-111 reconditioned for the Dutch as 16-222, 'KON MARINE' marked under rudder, at Bankstown 1954



Our next edition…

More camouflaged aircraft stripped to aluminium in the 1950s



Getting the RAAF Numbers right in WW2 Part 1 by Gordon R Birkett @2017

"A squadron in air force, army aviation, or naval aviation is a unit comprising a number of military aircraft and their aircrews, usually of the same type, typically with 12 to 24 aircraft, sometimes divided into three or four flights, depending on aircraft type and air force."[138]

Introduction: Squadrons need aircraft available first!

With the war clouds looming, Australia placed several contracts with overseas and local embolic Aircraft Industries for aircraft from 1938 to 1941.

It must be noted that aircraft series production in Australia actually started in 1923 when General Aircraft Company of Sydney produced six Avro 504K aircraft before going into liquidation.

Another company, Larkin Aviation Company manufactured some thirty-two Gipsy Moth Aircraft from the late twenties to 1929. They also constructed or assembled several types in series- Re-engine DH50's, a single Seven Seater three engine high wing monoplane, a five seater monoplane, two seats Training Plane and a five seater bi-plane.

With the arrival of the depression and the infancy of commercial travel, they ceased Australia's first local aircraft production.

It was only a short gap, thanks to the rearming of Germany in 1934.

Australia's wartime aircraft industry was re-born in 1935 when with the burden of knowing that in the event of war with Germany; overseas aircraft production supplies may not be possible.

The Australian Government, under the direction of Mr Essington Lewis, then BHP Chairman, convened a conference of leading Australian industrial organisations on the establishment of local aircraft production.

A syndicate was formed by February 1936, with BHP Ltd, Broken Hill Associated Smelters Pty Ltd, General Motors Holden, Imperial Chemicals Industries of Australia and New Zealand, Orient Steam Navigational Company and Electrolytic Zinc Company of Australasia as the participants; it would be soon known as the ***Commonwealth Aircraft Corporation****.* [139]

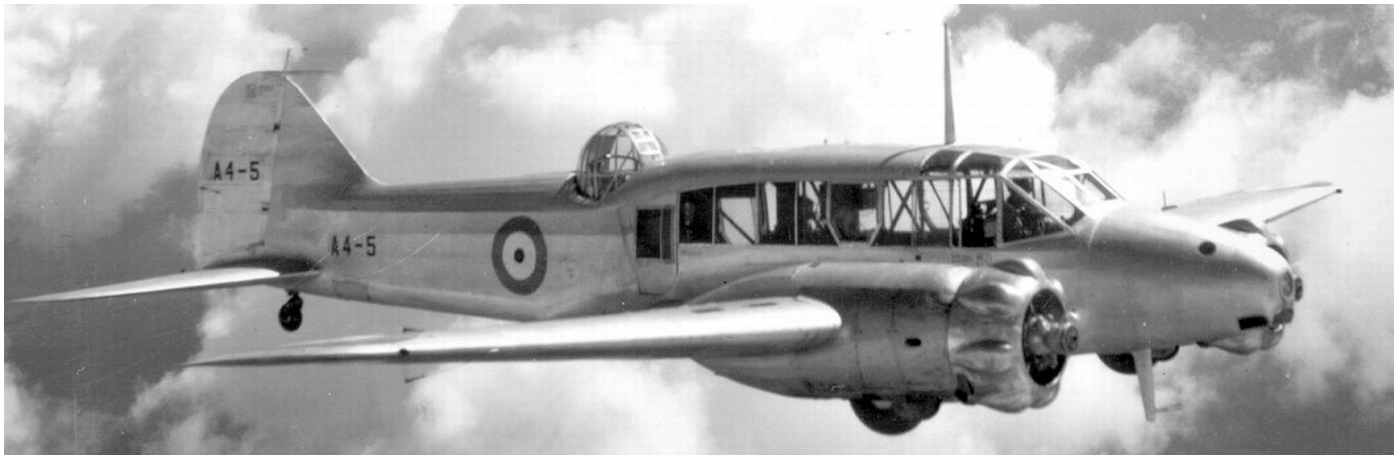
So from 1938, basically from scratch, the second birth of aircraft production began with the CAC CA-1 Wirraway Program, via a young complex industrial based Industry in 1945, designing and building the one off the Rolls Royce Griffin V-12 powered CAC CA-15 Kangaroo Interceptor[140].

Eventually by 1945, approximately 3500 aircraft of nine different types - Wirraway, Tiger Moth, De Havilland Dragon, Beaufort, Wackett Trainer, Boomerang, Mosquito, Beaufighter, and Mustang, along with some 3000 Aero Engines of three types -Twin Wasp, Single Row Wasp and Gypsy Major- were delivered to the RAAF from Australian based companies.

Other engine types required for production aircraft were primarily sourced and imported from either the United Kingdom, Canada or from the United States.

De Havilland Australia Pty Ltd based at Bankstown NSW, delivered its 1000th aircraft in the middle of 1942, A DH-82A Tiger Moth, whereas Commonwealth Aircraft Corporation (CAC) delivered its 1000th aircraft, a CAC Boomerang, at Melbourne in early 1944. Department of Aircraft Production (DAP) produced its 1000th aircraft, a DAP Beaufighter, by July 1945.

But in the early years of 1938 to 1940, first line aircraft production locally was delayed and then delayed through competing overseas needs for airframes and engines by the country of origin.



Despite this, local and overseas (Indents) for aircraft contracts were made for the re-arming of the RAAF, with direct Government payments from cash reserves or on arranged loans. Examples:

- Avro Anson GR Bombers from the UK
- CAC Wirraway Advanced Trainer (Local Production with first del: 01/08/1939)
- Nine Short S25 Sunderland Flying Boats from the UK (Del but held UK)
- Supermarine Walrus Attrition Orders from the UK
- Bristol (DAP) Beaufort (Local Production)
- Bristol Beaufighter 1F LR Fighter from the UK (Earmarked for delivery Nov 1941)
- Lockheed Hudson Mk1 GR Bombers from the USA (First Del 30/01/40)
- De Havilland (Aus) DH82A Tiger Moths (Local Production)
- Consolidated Catalina Model 28-5MA aircraft from the USA
- Brewster Bermuda Dive Bombers from the USA (Converted later to Vengeances)

With the start of World War II, another source of aircraft, free of charge, was secured when the Australian Government agreed to participate in the Empire Air Training Scheme (EATS). [141]

RAAF Unit Establishment of aircraft for Units:

By War's end, the RAAF would have 53 Active Squadrons on Establishment, to which we add another two NEIAF Squadrons and three RAF Squadrons based in Australia, making 58 Squadrons under RAAF Command. At the end of the Pacific War, the RAAF was the third largest Allied Air Force in terms of manning and aircraft, after Canada lost that ranking after starting its reduction in early 1945 after Germany surrendered.

Getting there was a long story...

The War Years start

During World War Two, a RAAF flying unit which carried out the primary tasks assigned in role, would vary in "in-use equipment" (IE) and "in-use reserve" (IR) aircraft , that reflected its RAF parentage of organisation. The number of aircraft depended on the particular role, or manning or perhaps even just what aircraft were supplied or borrowed to effect its role.

These roles ranged from the following at the end of 1939 in column one to 1946 which by the war's end, had expanded to include more role defined Units, such as in second column:

1939-1940	1941-1946
Fighter	Tactical Reconnaissance
Army Co-operation	Photographic Reconnaissance
General Reconnaissance (Flying boat)	Bomber (Light)
General Reconnaissance (Landplane)	Bomber (Torpedo)
Transport	Bomber (Medium)
Communication	Bomber (Heavy)
Air Ambulance	Special Duties Flight
Central Flying School	Interceptor Fighter
Elementary Flying School	Fighter (Long Range)
Service Flying Training School[142]	Air Armament School
Bombing and Air Gunnery School	Air Navigation School
Operational Training Unit	Air Performance Unit
Fleet Co-operation	Air Sea Rescue
Survey	VIP

The early Years: 1939-1942.

General Reconnaissance (Flying boat) Squadrons

The first Squadron to be formed at the start of the war was No 11 GR/Flying boat Squadron RAAF in September 1939.

Primarily, it was a result of lack of suitable a General Reconnaissance aircraft for seaward patrols that led to its establishment. The intended Australian Based No 10 GR/Flying boat Squadron RAAF, had been offered to the United Kingdom following the start of war in Europe, along with its nine Shorts Sunderland Mk1 Flying Boats. *It was intended to operate at an establishment of six "in-use equipment" (IE) and three "in-use reserve" (IR) aircraft. No 10 Squadron RAAF's nine Sunderland Flying Boats, with replacements, were being used in the Battle of the Atlantic from 1939 to 1945.*

Aircraft wise, the Unit was limited in size to the available aircraft held on strength by the RAAF or by requisitioned commercially available aircraft.

Two leased QANTAS Shorts Empire Flying Boats (Ex BOAC, held QANTAS, G-ADUT "*Centaurus*" and G-AEUA "*Calypso*") and two Supermarine Seagulls were its first aircraft. A further two QANTAS Shorts Empire Flying Boats were requisitioned in mid 1940 (VH-ABC "*Coogee*" and VHABB "*Coolangatta*").

Due to its "flight" size, the Officer in Charge position was a Flight Lieutenant, which for a short time, it was known as "Alexander's Rag Time Band", relating directly to the CO's surname, F/Lt J A Alexander.

The Consolidated Catalina Flying Boat, ordered under RAAF Contract Aus 58 (Model 28-5MA), began arriving from February to October 1941.

The first RAAF Consolidated Catalina, **AH534** later **A24-1**, a (above left, was a Model 28-5ME ordered under BPC A-37 RAF contract) arrived from America on the 6th February 1941. A Seaplane Training Flight had been sent up earlier in late 1940 at Rathmines for pilot and crew training of these new Catalina aircraft on order.

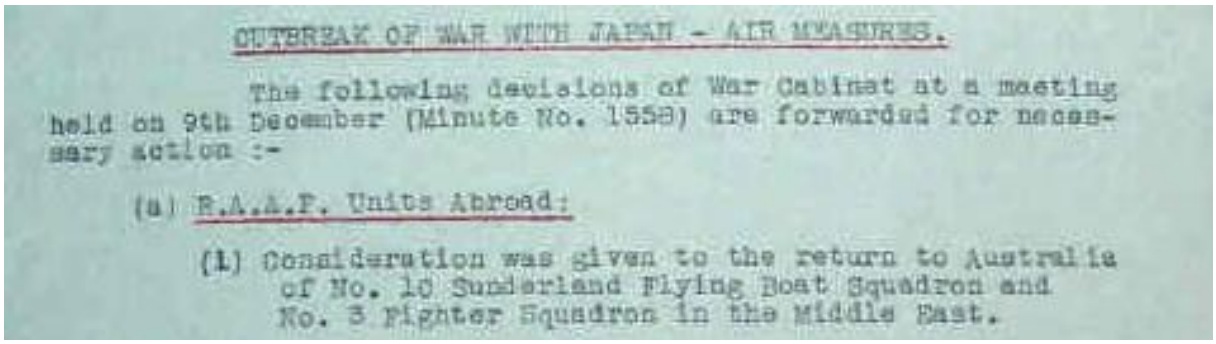
Originally only seven Catalina aircraft were ordered, but an additional eleven aircraft were later added to ensure adequate wastage was covered for the next three years of RAAF service.

War Experienced per RAF (and No 10 Squadron RAAF) had shown that a more economical establishment from the aspects of Administrative and operational control was six initial Equipment and three immediate Reserve per Squadron. [143]

The Catalina aircraft establishment for No 11 Squadron RAAF however (and later for No 20 Squadron RAAF) was still authorised from its inception to early 1943, with a total of six aircraft from the original order (4 x IE and 2 x IR). The balance of six on order would be used by the Seaplane Training Flight for training, servicing, and anticipated attrition.

With four leased QANTAS Shorts Empire Flying Boats still on RAAF Charge, now modified with military equipment and armament, these continued to serve along as a separate flight (2 x IE)within both squadrons.

A further nine Catalina Flying Boats were ordered in September 1941 in anticipation of the crews of No 10 (GR/Flying Boat) Squadron, on its conditional return to Australia in late 1941, *sans Short Sunderland aircraft*.



OUTBREAK OF WAR WITH JAPAN - AIR MEASURES.

The following decisions of War Cabinet at a meeting held on 9th December (Minute No. 1558) are forwarded for necessary action :-

(a) R.A.A.F. Units Abroad:

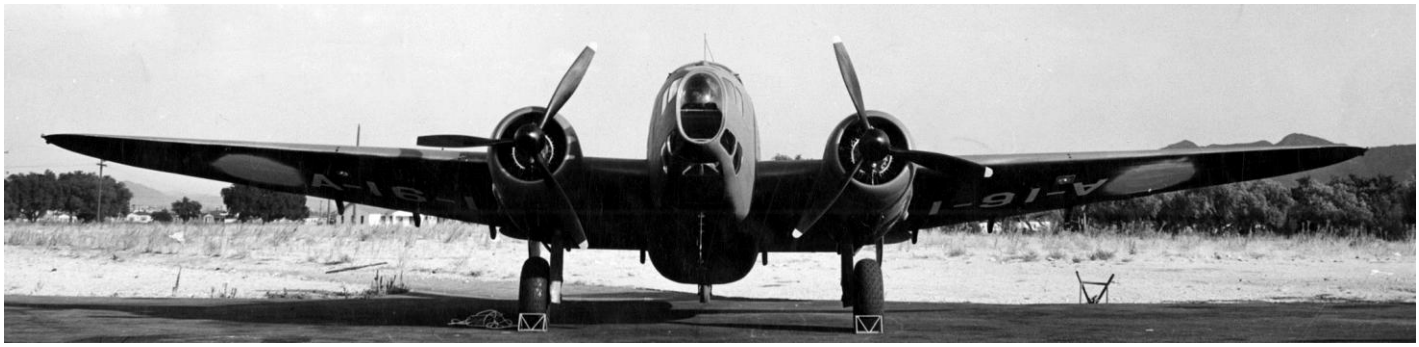
(1) Consideration was given to the return to Australia of No. 10 Sunderland Flying Boat Squadron and No. 3 Fighter Squadron in the Middle East.

But as the Battle of the Atlantic continued, these nine were re-diverted to the RAF, with the RAAF starting the Pacific War with just the original total of eighteen Consolidated Catalina flying Boats, less losses through attrition.

Per RAAF Supermarine Seagull V and Walrus Seaplane strengths, No 9 Squadron (Fleet Co-operation) RAAF operated the type as a Headquarters for around five or more ship based flights on five Royal Australian Cruisers with some sixteen aircraft on strength.

General Reconnaissance (Bomber) Squadrons

At the start of 1940, the April 1939 order for fifty one Lockheed Hudson Mk I (GR/Bomber) Aircraft was being delivered with the following Squadrons being equipped in order as follows: No 8, No 1, No 6, No 14, No 13 and No 2 (GR/Bomber) Squadrons.



A further Squadron would be formed at Amberley (Later at Laverton) in lieu of the transfer of No 1 Squadron from Laverton (and No 8 Squadron from Richmond) to Malaya on the 27th June 1940. That Squadron was No 7 Squadron, on the basis of a HQ and one Flight. Aircraft were to be provided from the reserve aircraft held, but this was limited. *It remained nucleolus, primarily for training with no aircraft allotted until late 1941 when the third batch of Hudsons arrived. It however was used at an Operational Training Unit with other squadron crews and aircraft to perform seaward patrols in December 1940, including twice with a 24Sqn RAAF Hudson and crew, attached.*

Deliveries were being made to both 2AD Richmond (Bulk of order) and 1AD at Laverton (Eight Hudsons arrived on the SS Port Wyndham in Melbourne, 23rd January 1940). Space was available at 2AD for an erection line for seven aircraft at any one time. The SS Limerick arrived in Sydney on the 23rd January 1940 with nine Hudsons.

The first reassembly of a RAAF Hudson, post delivery by ship from the USA, was on the 30th January 1940 at Richmond RAAF Station, by 2AD and No 8 Squadron Riggers. *The aim was for a weekly output of five aircraft. A further order for forty-nine Lockheed Hudsons were ordered during this time with deliveries commencing sometime after this date.*

By the 24th February 1940, a total of three Hudsons had been erected initially and test flown, with a total of twenty-nine erected by the 20th April 1940.

*The last RAAF Hudson was delivered, under the original contract, to 6 Squadron RAAF, on the 8th August 1940 (**A16-57, not as one would think a sequential, A16-100 above**).*

The Squadron Establishment for these six General Reconnaissance (Bomber) Squadrons would be nine "in-use equipment" (9 x IE) and three "in-use reserve" (3 x IR) aircraft. [144]

The combined aircraft number would at times later vary from ten to fourteen, due to transferring aircraft without immediate replacement, detachments, attrition and servicing.

In Malaya, the "in-use equipment" (IE) of both No 1 and No 8 General Reconnaissance (Bomber) Squadrons was increased to RAF standards to sixteen aircraft (16 x IE), with their six to eight immediate reserve (6-8 x IR)aircraft, depending on attrition, held by 151 Maintenance Unit at Singapore. A separate HQ Flight for each Squadron would also have attached a small number of De Havilland Dh.94 Moth Minor and/or a few DH-82 Tiger Moths[145].

As second contract Hudson Mk II(*RAAF Designation*) deliveries were to be made, separate flights would be also attached to other composite Squadrons to be formed(No 22, No 23, and No 24 Squadrons), these would vary from three to four "in-use equipment" (3-4 IE) and, depending on establishment , one or two "in-use reserve" (1-2 x IR) aircraft.

These *Composite Squadrons also included two flights of Wirraways (9 x IE and 3 x IR)as in the case of No 22, No 23 and No 24 Squadron, along with a single or two De Havilland Dh.94 Moth Minors.*

Depending on attrition on aircraft types held on establishment these number fluctuated on a month by month basis throughout their existence or role, insomuch as though numbers were designated on establishment, actual strengths did vary.

Taken on the 28th November 1941, No 1 Squadron and No 8 Squadrons aircraft numbered fourteen (14 x IE) and thirteen (13 x IE) Aircraft on strength, with only four aircraft (4 x IR) held in reserve with 151 Maintenance Unit. All up, thirty-one Hudson aircraft held in Singapore/Malaya. (Below: A16-52 US-M No 1 Sqn/A16-48 NN-R No 8Sqn pictured)

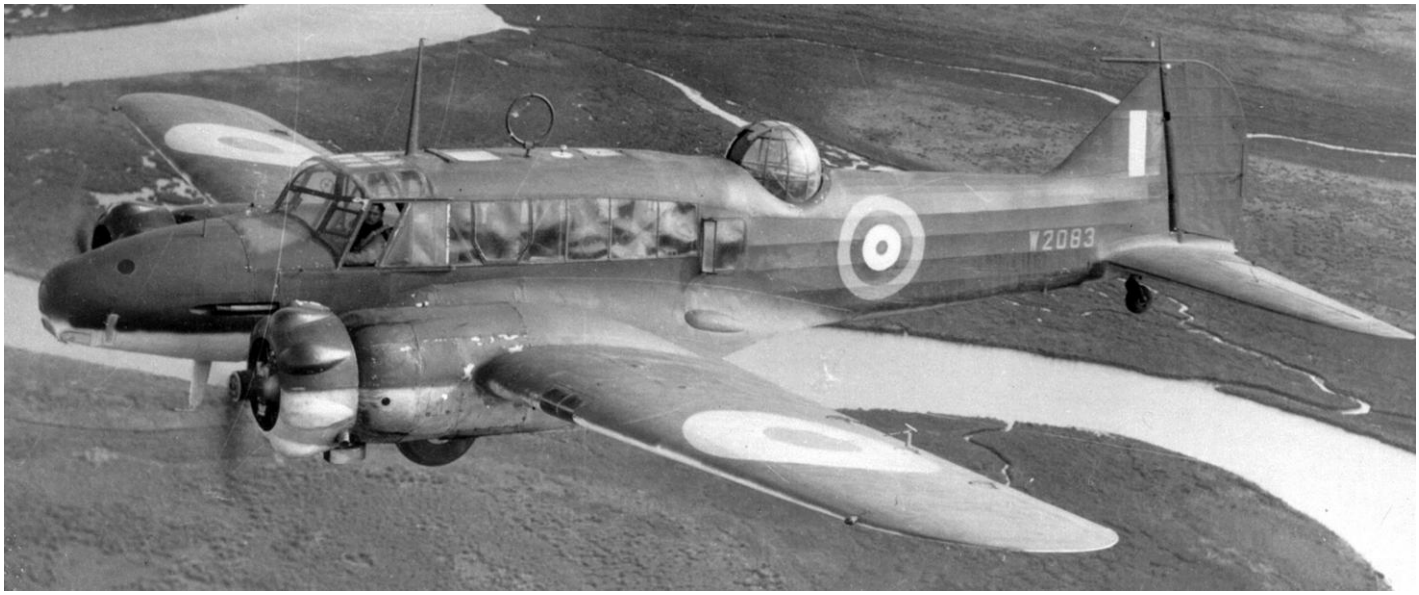
Increasing the aircraft reserve held to ten aircraft was discussed and agreed upon by the Air Staff, pending the arrival of the third batch of Contract Hudson Mk IVs soon to arrive ex USA.

Within a fortnight, the war with Japan had started, and Australian based GR Squadrons funnelled their Establishment aircraft north to replace attrition in Malaya and Netherlands East Indies (NEI).

Things were desperate as DAP Beaufort Production was just starting, Hudson deliveries just arriving ...woe us in GR Bombers.

By the last official RAF Weekly Stats (Far East) as at 3rd January 1942, No 1 and No 8 GR Squadrons RAAF had nine serviceable (9 x Cat A)and three under repair/servicing(3 x Cat B)/ thirteen serviceable (13 x Cat A)and one under repair/servicing(1 x Cat B), respectively. One further example from No 1 Squadron RAAF was a Cat C at 151 MU. A total of twenty-seven Lockheed Hudsons on hand, including six (6) replacement aircraft ex No 14 Squadron RAAF Hudsons flown up as attrition replacements late December 1941.

EATS, RAAF Training and Second line Squadrons



Originally EATS SFTS Establishment Anson strength in July 1940 was to be 42 x IE and 21 x IR in a total, for each of the proposed eight (8) multi-engine SFTS within EATS's. Under the revised Empire Air Training Scheme, the Establishment requirement for Anson/Oxford aircraft by July 1941, stood at some three hundred and eighty-eight (388) aircraft (All Anson, unless otherwise mentioned).

- Each Multi engine Service Flying Training School (EATS) (No 3 and No 4 SFTS) required an establishment of seventy-two "in-use equipment" (72 x IE) and thirty-six "in-use reserve" (36 x IR) for a total of one hundred and eight aircraft(108).
- Multi engine Service Flying Training School (RAAF) (No 1 SFTS) required an establishment of forty-two "in-use equipment" (42 x IE) and twenty-one "in-use reserve" (21 x IR) for a total of sixty-three Oxford aircraft (63).
- Each Multi engine Air Observer School (EATS) (No 1 and No 2 AOS) required an establishment of sixteen "in-use equipment" (16 x IE) and eight "in-use reserve" (8 x IR) for twenty-four aircraft (24).
- Each Multi engine Air Navigation School (EATS) (No 1 and No 2 ANS) required an establishment of nine "in-use equipment" (9 x IE) and five "in-use reserve" (5 x IR) for fourteen aircraft (14).
- Central Flying School (RAAF) required a multi engine aircraft establishment of nine "in-use equipment" (9 x IE) and three "in-use reserve" (3 x IR) for a total of twelve aircraft (12).
- General Reconnaissance School (RAAF) required a multi engine aircraft establishment of twelve "in-use equipment" (12 x IE) and six "in-use reserve" (6 x IR) for a total of twelve aircraft (12).
- Armament School (RAAF) required a multi engine aircraft establishment of two "in-use equipment" (2 x IE) and one "in-use reserve" (1 x IR) for a total of three aircraft (3).
- Survey flight required “in-use equipment" (2 x IE) and one "in-use reserve" (1 x IR) for a total of three aircraft (3).

At this juncture, the RAAF had on account (owned), with eighty-eight (88) Ansons originally delivered, which by the 30th July 1941, had some thirteen (13) written off, for a total of seventy-five (75)left on hand.

The EATS Inventory of Ansons numbered two hundred and thirty-nine (239) delivered, two(2) written off, with a further thirty-two (32) on the seas due for delivery, for a total of two hundred and sixty-nine (269) aircraft.

The EATS Inventory of Oxfords numbered at twenty-two (22) with a further fifteen (15) on the seas, for a total of thirty-seven (37) aircraft.

A further twenty-two (22) civil aircraft were received, of which three (3) had been written off and another nineteen (19) on the sea. *Regrettably eighteen (18) were advised being sunk in September 1941, on route.*In total some four hundred (400) aircraft on hand or on the sea. However this total is reduced by some fourteen (14) Anson "airframes only" held, six (6) Ansons damaged in transit, and a further forty-four (44) not erected to date, reducing the number available to three hundred and thirty-six (336) aircraft in inventory.

More Ansons and Oxfords would arrive over the next twelve months.

By May 1942, the supply of Anson and Oxford Aircraft had increased, and so, whilst maintaining the established Units "In equipment" and "In reserve" totals , a further two Service Flying Training Schools, one Air Navigation School and one Bombing and Gunnery School were established:

- 8 SFTS Multi engine Service Flying Training School (EATS) was formed with an establishment of seventy-two "in-use equipment" (72 x IE) and thirty-six "in-use reserve" (36 x IR) for a total of one hundred and eight aircraft (108).

- 6 SFTS Service Flying Training School (EATS) [146]was formed with an establishment of seventy-two "in-use equipment" (72 x IE) and thirty-six "in-use reserve" (36 x IR) for a total of one hundred and eight Oxford aircraft (108).
- No 4 BAGS multi engine Bombing and Gunnery School (EATS) was formed with an establishment of forty-eight "in-use equipment" (48 x IE) and sixteen "in-use reserve" (16 x IR) for a total of sixty-four Oxford aircraft (64).
- With each Multi engine Air Observer School (EATS) (No 1 and No 2 AOS) now doubled in establishment of thirty-six "in-use equipment" (36 x IE) and twelve "in-use reserve" (12 x IR) for a total of forty-eight aircraft (48).
- Another Multi engine Air Navigation School (EATS) (No 3 ANS) was established with nine "in-use equipment" (9 x IE) and five "in-use reserve" (5 x IR) for a total of fourteen aircraft (14) along side of No 1ANS. No 2ANS was increased from fourteen aircraft to twenty-one "in-use equipment" (21 x IE) and seven "in-use reserve" (7 x IR) for a total of twenty-seven aircraft (27).

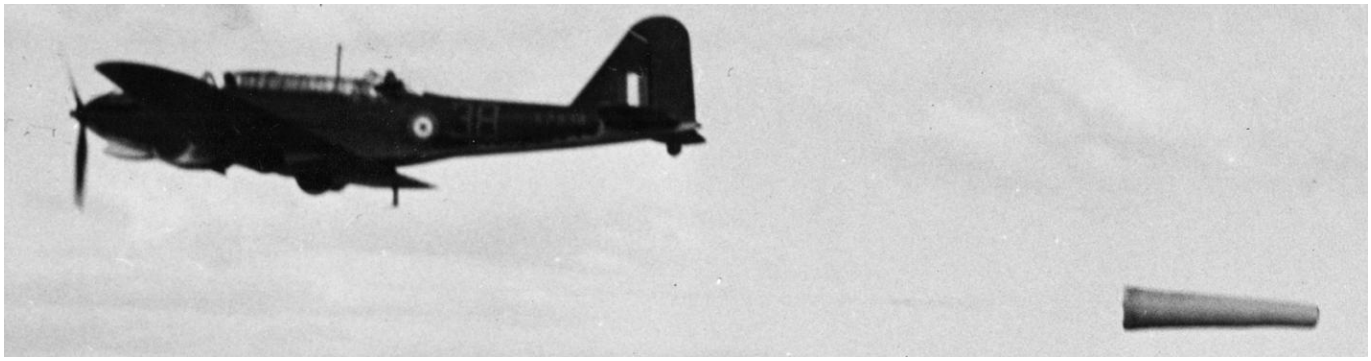
A total of 517 Ansons had been delivered by the 13th May 1942, with another 20 on the sea with a further 39 supplied through suspension of a Charter Agreement; making in total 576. The total now included a reserve establishment for wastage, of 101 Ansons on hand.

Oxford totals included 227 delivered, with another 22 on the sea, for a total of 249 Oxfords delivered. The total now included a reserve establishment for wastage, of 14 Oxfords on hand. *Wastage was based on 25% of "in-use equipment" numbers for the year.*

Note: *Previous delays in the supply of Ansons resulted in De Havilland Australia producing locally, the DH 84 Twin Engine aircraft since 1940 to stop gap the delays. The DH-84 Dragon was not suitable in that role and was eventually dispersed to Communication Units, Ambulance Flights and Station Headquarter Flights there on. Production ended at 87 Aircraft in June 1943.*

Fairey Battles

Each Bombing and Gunnery Schools (EATS) required an establishment of fifty-four “in-use equipment" (36 x IE) and eighteen "in-use reserve" (18 x IR) for a total of fifty-four aircraft (54).

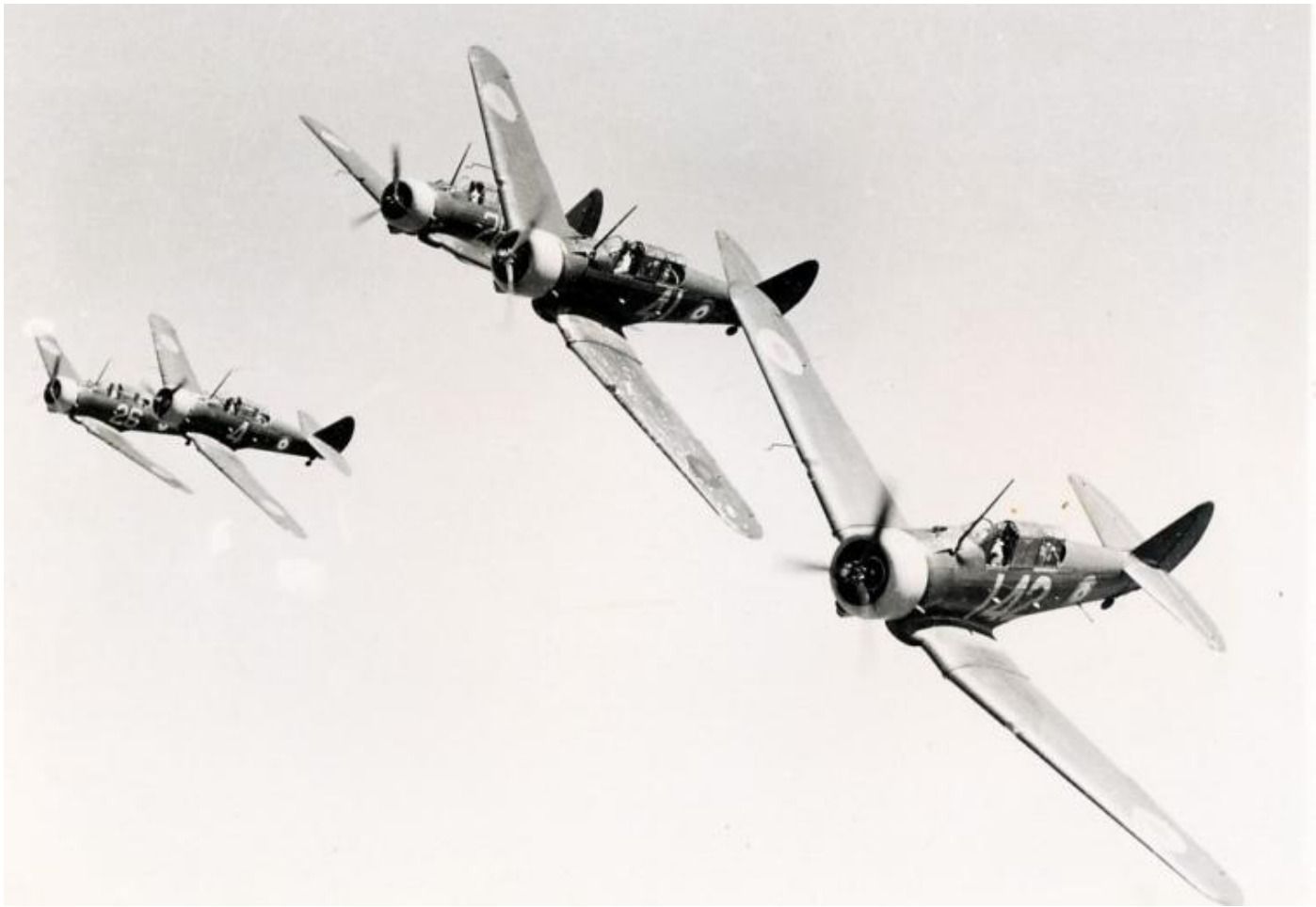


A further thirty Target Towing Battles were also included (30 x IE/IR). But in actual numbers the split in total was Sixty-four (64) Standard/Twenty (20) Target Towing Battles.

By September 1941, some one hundred and forty (140) Battles had been received with a further three (3) on the seas.

Wirraway: RAAF Front line and training and EATS Training

The first Wirraway was flown on the 27th March 1939. While not going into the overall RAAF history of Wirraway orders and production, an aggregated total of six hundred and twenty Wirraways of several models were contracted with CAC by 1941, for all to be delivered by May 1942 to both the RAAF (487) and RAF (EATS) (133).[147] *Difference between an operational Wirraway verses a Training Wirraway, was only Paint and ammo.*



The establishment for Wirraway Units as of the first of December 1941 were as follows:

- No 4/5/12/22/25 Squadrons RAAF: twelve "in-use equipment" (12 x IE) and six "in-use reserve" (6 x IR)
- No 23/24 Squadrons RAAF: eight “in-use equipment" (8 x IE) and four "in-use reserve" (4 x IR) (Two out of three flights equipped, with third being Hudson).
- No 21 Squadron RAAF , Malaya: : four "in-use equipment" (4 x IE) and two "in-use reserve" (2 x IR)
- Central Flying School (CFS): Nine "in-use equipment" (9 x IE) and five "in-use reserve" (5 x IR)
- No 1 Service Flying Training School (SFTS): eighteen "in-use equipment" (18 x IE) and nine "in-use reserve" (9 x IR)
- No 2 Service Flying Training School (SFTS): seventy-two "in-use equipment" (72 x IE) and thirty-six "in-use reserve" (36 x IR)
- No 5 Service Flying Training School (SFTS): thirty-six "in-use equipment" (36 x IE) and eighteen "in-use reserve" (18 x IR)
- No 7 Service Flying Training School (SFTS:EATS): seventy-two "in-use equipment" (72 x IE) and thirty-six "in-use reserve" (36 x IR)
- No 1 Armament Training Station: three "in-use equipment" (3 x IE) and one "in-use reserve" (1 x IR)
- Armament School, Point Cook: two "in-use equipment" (2 x IE) and one "in-use reserve" (1 x IR)
- Operational Training Unit: eleven "in-use equipment" (11 x IE) and five "in-use reserve" (5 x IR)

A total of four hundred and fifty-four (454) Wirraway Aircraft numbered with three hundred and three (303) In-use Establishment.

On a RAAF statistical date of the 12th March 1942, some four hundred and seventy-eight (478) were on hand, with a further seventy-nine (79) to be produced. A further twenty-one (21) were in the process of being written off or presumed lost in recent operations. One hundred and seventeen (117) equipped first line Units, with the balance of three hundred and forty (340) equipping RAAF owned SFTS's (No 5 and No 7 SFTS) and various training units.

Recapitalising the RAAF: its GR Bomber Squadrons, and establishing Fighter and Dive Bomber Squadrons: The Race to the thirty-two Squadron Plan

Three days before the Japanese steamrolled into the Pacific and Malaya, on the 5th December 1941, the first eighteen Hudson Mk IVA (USAAF Model A-28-LO, equipped with a Tunnel Gun mount in rear fuselage) aircraft of fifty-two Hudsons ordered under the fourth contract[148], arrived by sea. These were powered by two Pratt and Whitney R-1830-SC3G Twin Row Wasps Engines and thus were similar powered per the RAAF's previously one hundred Hudson Mk I/II aircraft delivered from 1940, except for airscrew types and other fittings[149].

Originally the dispersal of the new aircraft: *Six were required by the newly established operational Training Unit and the balance to provide Establishment aircraft for No 7 GR/Bomber Squadron with its transfer to Darwin, and to establish a new Unit,... to be named No 19 GR/Bomber Squadron* by December 1941. (*Originally was to be numbered No 29)*

The follow up delivery of the fifth contract were Hudson Mk III's that arrived from the 26th December 1941, were powered by two Wright GR-1820-G102A Cyclone engines. This presented a difficult issue of operating various Hudson Model Types within operational Squadrons in regards to operating two different engine types, and various airscrew control types, and their support side by side each squadron.

From December 1941 to January 1942, after which deliveries were halted due to the pacific shipping turmoil per prioritised US Army use, for about a month, some fifty-nine RAAF Hudsons of both model types (51 Mk IVs and 8 Mk IIIs by count) were delivered at a time when early Pacific war attrition reached its peak per Hudsons and crew losses.

The solution discussed was to transfer the various Hudson marks and pool within the three theatre commands (North Western/North East/ Eastern) into subtypes, following the early attrition, increase the number of combined operational GR Bomber and Torpedo squadrons to fourteen (14) (Hudson in GR and DAP Beauforts in GR/T roles), and proposed wastage to ensure there was a simplified pipeline of replacement aircraft, their spares delivery and maintenance.

The November 1941 plan was to concentrate all of the Mk I's into No 1, 8, 13, 2,(All 18 x IE/IR) 23, and 24 GR Bomber Squadrons) 4 x IE/IR) and the Mk IV's into No 14, 6,(12 x IE/IR) 7 (18 x IE/IR)and OTU (6 x IE/IR) per some 128 x IE/IR establishment with 10 Mk I and 4 Mk IV reserves.

With the delivery of the later Mk III's, these would replace No 6, 23 and 24 Squadron's Mk I/Mk IVs with their current aircraft "thrown up" as attrition replacements and increased Establishments for the Mk I equipped squadrons (No 1, 8, 2 and 13) and used to bring up to the stated full establishment of No 14, 7 and the OTU with Mk IV's.

With more Mk III's arriving, three new GR/Bomber squadrons would be formed; No 32 (Townsville), 19 (Amberley) and 17 (Nowra), on Hudsons.

Each of the fourteen GR/Bomber Squadrons under the new Thirty-Two Squadron Plan, were to be equipped with twelve (12) IE and six (6) IR aircraft, with a further 3 years worth of wastage at 25% strength. These included both types being delivered or built locally (Hudson and Beaufort). The total required for these expanded GR/Bomber squadrons, would be one hundred and sixty-eight (168) IE and eighty-four (84) IR aircraft required on establishment, with the three (3) year/25% wastage total held in reserve, being reflected by a further one hundred and twenty-six (126) aircraft. *(In October 1941, the total*

RAAF requirement per planning, showed the Hudson number was actually 240 aircraft with 246 aircraft received/or on ordered, along with 96 Beaufort Torpedo Bombers on order)

Add the fifth contract of ninety-four Hudsons by May 1942 delivery schedule with a further seventy-two (72) to the establishment and twenty-two (22) Reserves, for a total number of two hundred and thirty-six (236) Mk I/III/IV Hudson's that were on order or delivered.

Thus in simple terms, Mk III's would be operated on the east and north coast's areas and the balance of Mk1's and Mk IVs would be "up northwest" Darwin and Malaya Areas.

This was easier said and done considering the start of operations against Japan, and the ongoing application of operations and attrition.

For example, No 13 GR/Bomber Squadron in the North West Command, operated all three Mk I/Mk III/Mk IV engine versions from March 1942 to up August 1942!

Fighter Squadrons

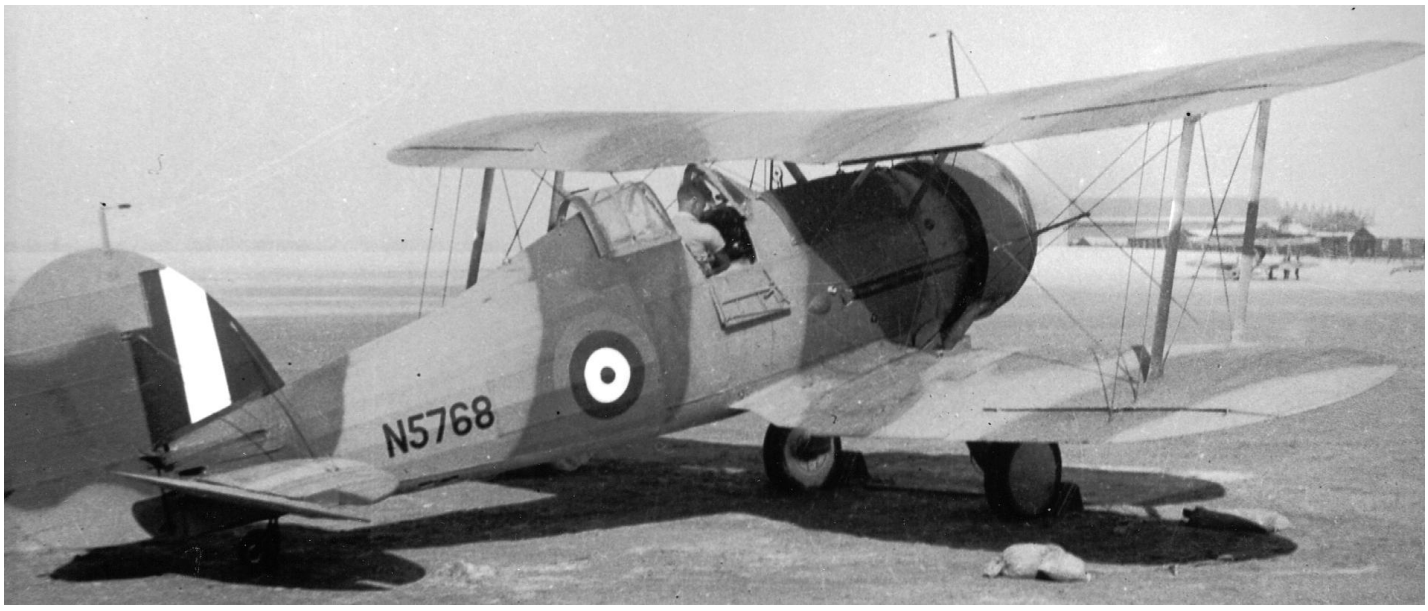
This is a bit of a misnomer, as the RAAF only organised its first full Squadron Fighter establishment with, albeit, the overseas deployment of No 3 and No 21 Squadrons in War theatres in 1940. We did have one pure fighter type on strength...the Bristol Bulldogs. *Old Bi Plane that gave way to a modern,..Bi Plane..*

On 23rd August 1940, No 3 Squadron RAAF arrived at Port Tewfik, Egypt.

The Squadron moved to Ismailia and was to be equipped with Westland Lysander aircraft as an Army Co-operation Unit, not a fighter Unit.

These aircraft were still en-route from the United Kingdom, and in any event, only six Westland Lysander aircraft would actually arrive.

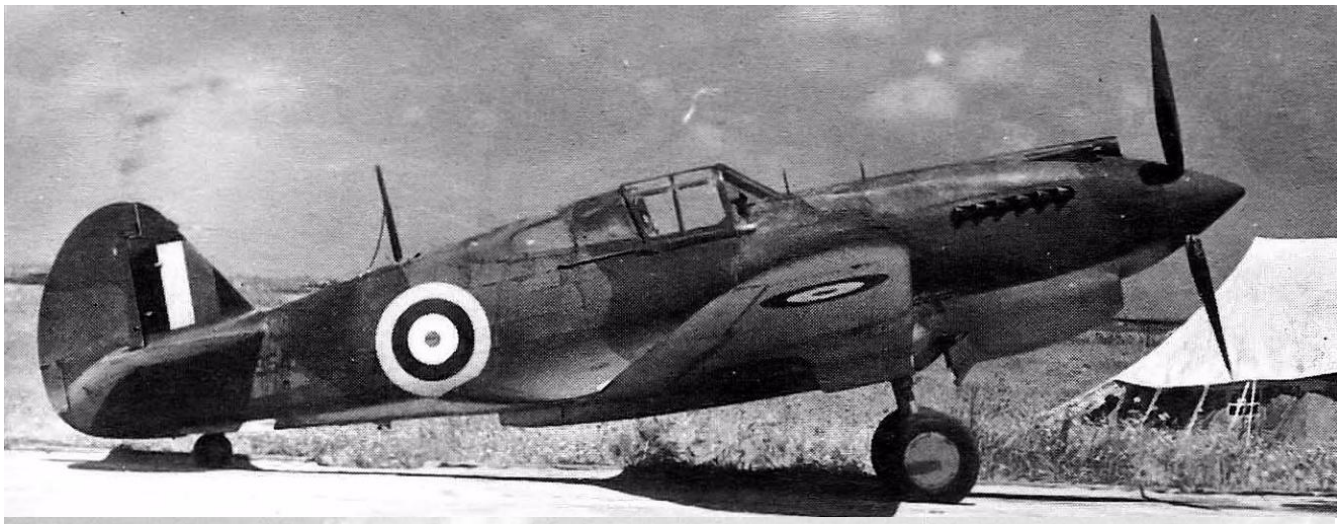
Two fighter flights would have Gloster Gauntlets and Gladiators Bi P{lane Fighters(made up out of 6 and 10 supplied respectively) thrown up by No 33 Squadron RAF were received from 102 MU at Abu Sueir.



The third flight would retain the six Lysander aircraft and would remain at Ismailia and oversee the erection of six Westland Lysander II aircraft.

For the next few months they would operate those types, before converting to Hawker Hurricane Is in January /February 1941 for a short period of three months.

The first three Curtiss Wright Tomahawk Mk1s for No 3 Squadron RAAF (**AK354 pictured nas delivered in temperate scheme, AK407 and AK410 pictured with desert Tan**) were received from 102 MU at Abu Sueir on the 13th May 1941.



Eventually by the 7th June 1941, the Squadron would be at its established strength of a total of sixteen “in-use equipment" (16 x IE) and eight "in-use reserve" (8 x IR) Curtiss Wright Tomahawk Mk 1 aircraft.

The Tomahawk was then operated during the Syrian Campaign, in which the squadron was involved from 8th June 1941 until 11 July 1941, before returning to operations in the Western Desert from early September, 1941 after some desert camouflage was applied.

Attached at times were various types, including a Miles M.14A Magister I for communications and at times, several captured aircraft at different times. By November 1941, through attrition and supply, establishment was twenty-one Tomahawks (17 x IE) and four (4 x IR).

It was finally, the first RAAF Fighter Squadron to be equipped with the Curtiss Wright Kittyhawk Mk 1/Mk1A from the early part of December 1941. As of the 1st January 1942, it was equipped with twenty-one Kittyhawk MkI/Ia on hand (19 x IE and 2 x IR) on establishment.

In Malaya ...a transformation from Wirraway to Buffalo

The other RAAF "fighter" Squadron was No 21 Squadron RAAF (City of Melbourne), then based at RAAF Station Sembawang on Singapore as an Army Co-operation Squadron.

In line with the RAF Establishment, it was issued with eighteen Wirraway aircraft (12 x IE and 6 x IR).

When it was re-equipped with actual Fighters, Brewster Buffalos Mk1, it was changed to a Fighter Squadron, starting with the arrival of the first aircraft on the 28th August 1941.The establishment IE/IR remained unchanged, but fluctuated at times up to seventeen held in total. The six IR aircraft were actually held away from the Squadron at 151 MU.

An additional aircraft, a single Wirraway (**A20-59**), remained with No 21 Squadron RAAF for Dual Training.

Of the balance, some eleven Wirraways were allotted to a Joint RAF/RAAF Operational Training Unit at Kluang (Stated 8 x IE and 3 x IR) for training purposes, and the remaining balance of four to returned to Australia by sea[150].

By the last official RAF Weekly Stats (Far East) as at 3rd January 1942, 21 Squadron RAAF had seven serviceable (7 x Cat A) and five under repair/servicing (5 x Cat B). The single Wirraway (1 x Cat C) was with 151 MU.

Home Defence 1940-1941, what fighters?

There was recognition at home and a stated re-visited requirement in late 1940 of the need for fighters, particularly Long Range Fighters.

This re-visited requirement was originally preceded in June 1939 with a "subject to prototype flying and service accepted", of an order of eighteen Bristol Beaufighters for the RAAF. This was considered a good choice that could in the future, under licence production later, dovetailed into the DAP Beaufort Program. The fall of France and the tightening of export controls resulted in its deletion from the RAAF expansion program until a later date.

However, with the excursions of several German Navy (Kriegs Marine) Surface/Commerce Raiders (They operated ten very successful auxiliary cruisers such as the Kormoran, Komet, Kulmerland, Pinguin and Orion) in the Indian and Pacific Oceans in 1940-1941 and their very real possibility of perhaps carrying and using float planes (actually 1x Arado 196 A1 seaplane) in the sea lanes around Australia worried Officials.

In fact this was heightened when one of these ships was sunk off the Western Australian Coast in November 1941 by HMAS Sydney, who herself was sunk. Thus it became again a very real concern for not having fighters.

In May 1941, the RAAF managed to secure finally an order for fifty-four (54) Beaufighter Mk IFs to be delivered in November 1941. These were to equip two squadrons, No 30 and No 31 Fighter Squadron RAAF, both with an establishment of 18 x IE/IR and a OTU with 6 x IE/IR, leaving a reserve of twelve (12) aircraft.

Twelve were to arrive by December 1941, followed by another fourteen monthly by March 1942, making a total of fifty-four Beaufighters delivered. (**A19-3** Pictured May 1942)

The *ebbs and flow of war*, in the United Kingdom, the Desert War and other theatre requirements, pushed back their release, with the first delivery finally being made on the 26th March 1942 (**A19-7**).

It would not until the 10th March 1942, that the first Australian based single engine fighter Squadron, with Kittyhawks be established at Townsville.

The odd one out: Dive Bombers

After the success of the Luftwaffe using Ju 87 Stuka Dive bombers during the first portion of the European War, viewed in the RAAF context, being desperately short of modern types in early 1941, sought some 243 Brewster Bermudas in the new Dive Bombing Role.

It was expected that the initial four would arrive during June 1941 and with subsequent monthly deliveries would allow the following 11 squadrons to equip with eighteen Bermudas each (12 x IE & 6 x IR):

- Establishing 27 Squadron RAAF July 1941 Hobart Tasmania
- Re-equipping 21 Squadron RAAF August 1941 Malaya from Wirraways.
- Establishing 28, 30 and 31 Squadrons RAAF at Richmond NSW September 1941
- Establishing 26 Squadron RAAF and re-equipping 12 Squadron RAAF from Wirraways at Darwin NT during October 1941
- Re-equipping 22 and 25 Squadrons RAAF in each Capital City during November 1941 from Wirraways
- Re-equipping 4 Squadron RAAF Canberra during December 1941 from Wirraways.
- Re-equipping 5 Squadron RAAF with ex-30 Sqn Bermudas during January 1942 from Wirraways.
- Re-equipping 23 and 24 Squadrons RAAF in each capital City during February (with Ex-31Squadron Bermudas) and March 1942 respectively from Wirraways
- This would leave a pool of 45 aircraft for maintenance, training and normal attrition.

No 30 and 31 Squadrons RAAF, being based at Richmond NSW, would only use them initially as transition trainers till they were re-equipped with twin-engine fighters allocated from some 54 Beaufighters ordered during May 1941. [151]

Throughout 1941 and 1942 handling and production problems caused lengthy delays, and the USN had decided that there was no need for a new dive-bomber when the SB2A finally became available. Deliveries of the SB2A-1's aircraft were halted after only two were delivered.

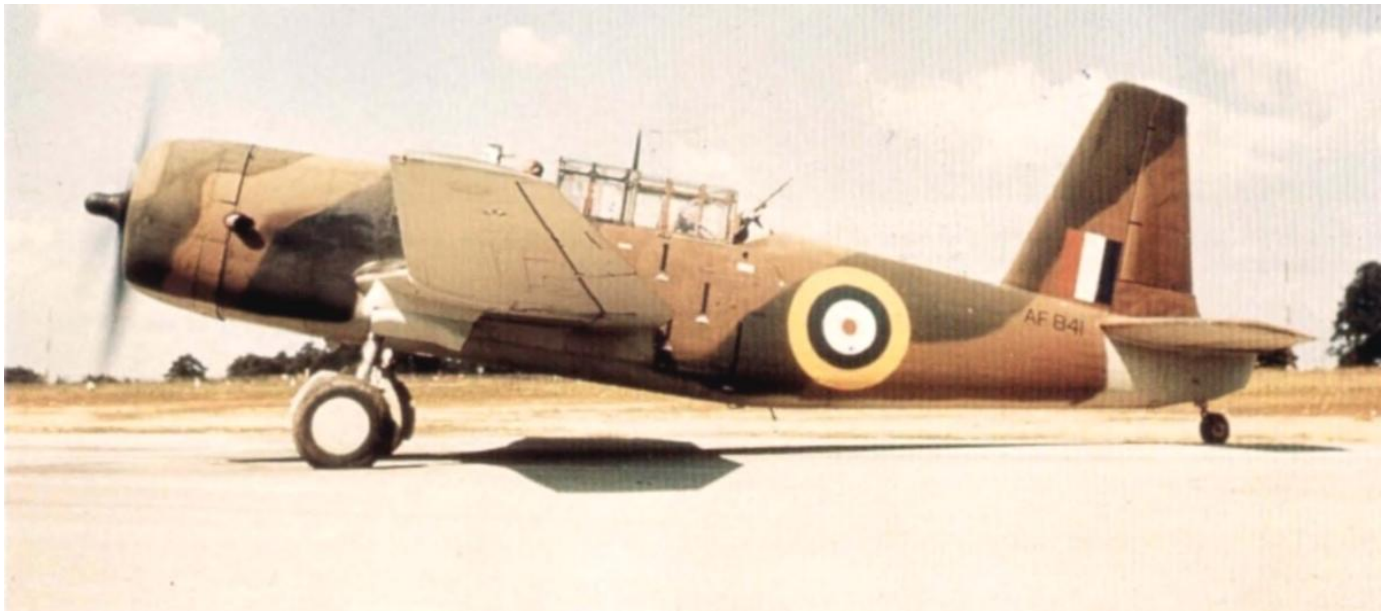
The Curtiss Helldiver would fulfil the US Army Air Force/ US Navy requirements of both a land based and carrier based Dive-bomber.

In any event, the RAAF also later ordered the A-25 Helldiver in substantial numbers, only to cancel those too.

Due to the lengthy delays, apparent un-resolved design and performance flaws with the Bermuda aircraft, the RAAF during November 1941, decided to cancel and place orders for the Vultee V72 Vengeance Dive-bombers instead.

*In the mean time, CAC started modifying some 113 Wirraways with dive brakes and after modification re-issued to those squadrons earmarked for the deliveries of Vultee Vengeances.*The first Vengeance deliveries arrived on the 30th May 1942, and soon after No 12 GR/DB Squadron (and 4OTU) became the first squadron to be re-equipped from D/B modified Wirraways.

However lengthy delays of deliveries slowed down the supply of aircraft to fill the proposed establishment of these eleven squadrons from a pool of two hundred and ninety-seven (297) Vengeance aircraft, then on order. *Pictured below: Vengeance AF841 in the USA, later becoming A27-276 in Australia.*



In any event, Vultee Vengeances only equipped five squadrons, each with eighteen aircraft on establishment (12x IE/6 x IR): Nos 12, 21, 23, 24 and 25 Squadrons RAAF by late 1943; and after a somewhat short indifferent career, the squadrons and their aircraft were withdrawn from frontline operations finally in June 1944.

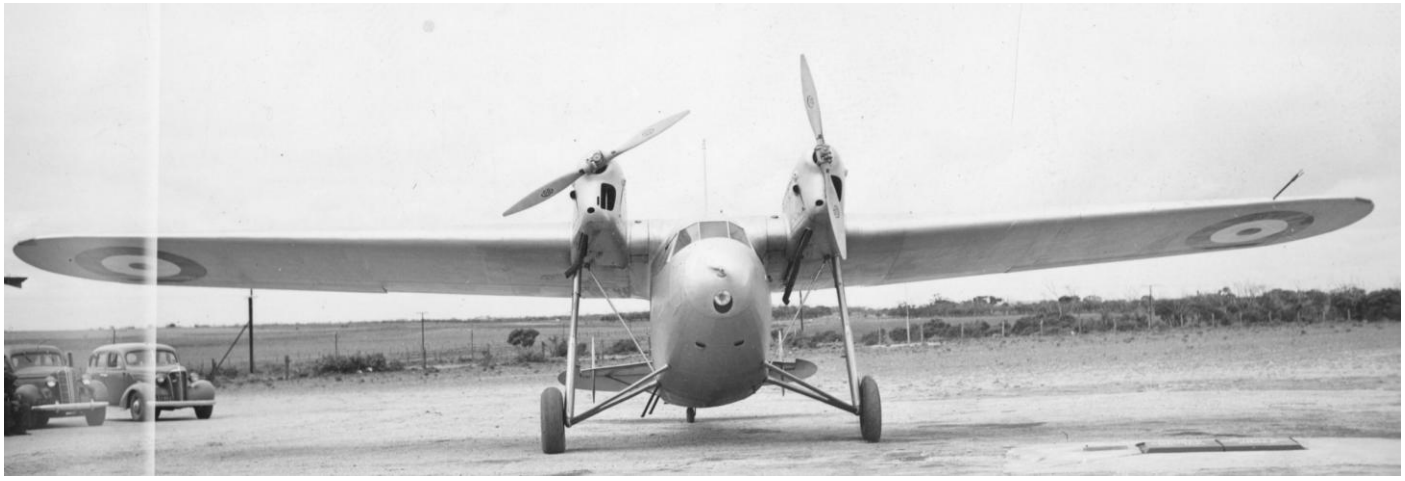
The P-40N's that were used for air cover during their operational life, took over their role as dive bombers as part of their duties with the decline of Japanese air power, with one less crew member, almost the

same bombload and accuracy, for the remainder of the war. These ex Vengeance Units would later convert to a heavy bombing role with the supply of B-24J/M Liberators. Vengeances after withdrawal from frontline service, continued on in the communications and target role with Nos 3, 4, 5, 6, 7 and 8 Communication Units, OTU's, Station HQ Flights and for experiments (No 1 Air Performance Unit).

By war's end, a total of three hundred and forty-nine (349) were delivered, with several being re-directed to the Royal Navy Fleet Air Arm in Australia.

Part 2 will discuss Lend Lease, the Beaufort Effort and the 53 Squadron Air Force of 1943-44

Odd Shots: Wackett's Early Designs



The Tugan LJW7 Gannet, also known as the Wackett Gannet after its designer Sir Lawrence Wackett, was a small twin-engine airliner built initially by Tugan Aircraft in Australia in the mid-1930s until Tugan was absorbed into the Commonwealth Aircraft Corporation (CAC) in 1937.

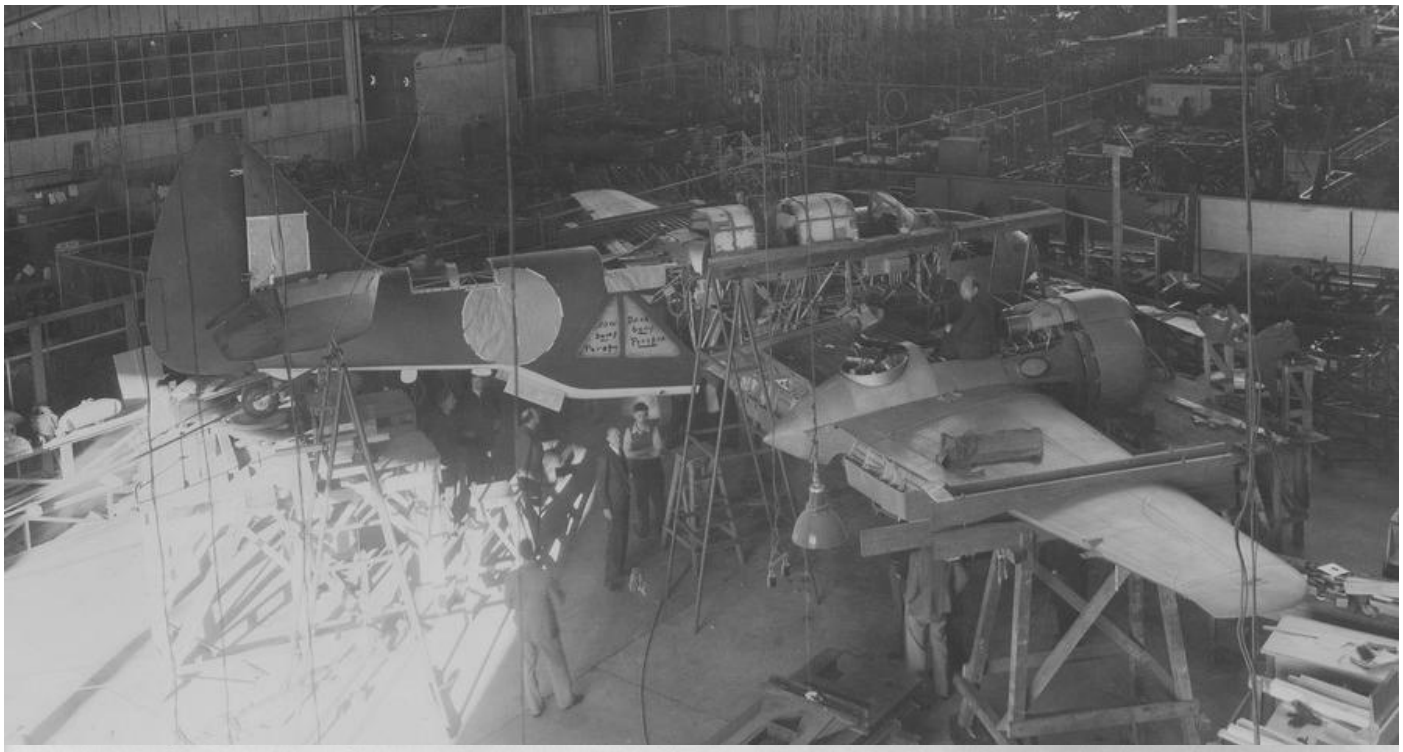
The Air Board purchased two Gannets (A14-1 and A14-2) from Tugan Aircraft in 1935 and 1936 for use by the RAAF in general transport duties and aerial photographic surveys. Both aircraft were traded in to the CAC as a down payment for additional [improved] Gannets in December 1937.

A14-1 was upgraded and modified then placed in storage with CAC until it was impressed into RAAF service in June 1940. A14-2 was also upgraded but it was sold and operated in Papua New Guinea as VH-UXE until it was destroyed by the 1st Japanese air raid on Port Moresby on the 24th February 1942.

Two more Gannets were purchased from CAC in December 1937; one purchased in March 1938; and, two more impressed into Service in June 1940. All five Gannets (A14-3 (Pictured) thru A14-7) were initially operated as general duties transport aircraft before they were all modified as Air Ambulances in 1942 and allocated to No 2 Air Ambulance Unit.

Later, now employed by CAC, with Sir Lawrence Wackett's designing, began work on its own design, hoping to out-perform the Beaufort by building a machine that could serve as both a torpedo bomber and dive bomber. To keep down weight, Wackett dispensed with traditional self-sealing fuel tanks and opted to make the wing cavities liquid-tight, and thus serve as fuel storage. The Australian Government was initially uninterested in the CAC design. However, in mid-1940, cut off from the supply of British-made components for the Beaufort program (thanks to a British embargo on the export of aviation products, due to the need to maximise British production during the Battle of Britain), the Australian Government ordered a prototype of the CAC design, even before the Royal Australian Air Force had expressed a view about the machine.

This prototype CA-4 took to the air on 19 September 1941. (Pictured below). The CA-4 was a low-wing, twin-engine, multi-role bomber with a crew of three. It was armed with four nose-mounted .303 calibre machine guns and two remote-controlled twin machine-gun barbettes mounted at the rear of the engine nacelles.] It could carry either 500 lb (230 kg) bombs, 250 lb (110 kg) bombs or two torpedoes. It was originally powered by two Pratt & Whitney Twin Wasp R-1830-S3C3-G radials. Unfortunately, the novel fuel tanks never proved reliable, and in January 1943 the CA-4 prototype was completely destroyed in a mid-air explosion



Only one production aircraft was completed: A23-1 per below

One other design that did make production was the Wackett Trainer. Pictured A3-74 and A3-174

A3-200, the last built

A survivor exists, A3-22.

Editor's Notes: <u>Contributors are most welcome to provide written articles or even topics to be covered by others.</u>

Special thanks to John on the inclusion of his article, his advice and contributions: Many Thanks

End Notes:

End Notes: RAAF AIRCRAFT MARKINGS; SQUADRON MARKINGS – PART 6 – DROPPING THE FIGLEAF

John Bennett 2017

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[1] See *adf-serials* Vol 7 Issue 5, Summer 2017, for Dakota article no.5 in this series: http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Summer%20.pdf

[2] T.O. 07-1-1 of 26 DEC 1943, *R Archer & V Archer, USAAF Aircraft Markings and Camouflage 1941-1947*, Schiffer, Atglen PA, 1997, pp.163-170.

[3] RAAF HQ signal TJ.285 of 19 NOV 1943, file 1/501/329 (119A). This directive advised that aircraft arriving from overseas may not be camouflaged, that they are to then be camouflaged by the erecting unit (normally and Aircraft Depot), and that "any aircraft proceeding to operational area must be camouflaged".

[4] These changes in policy are summarised in: Ian K Baker, *Aviation History Colouring Book*, Queenscliff, No.78 (2013), pp. 4-5.

[5] RAAF HQ DTS approval Minute 131, c 12 JAN 1944, in response to query by HQEA 24 DEC 1943, and by RAAF Command HQ of 31 DEC 1943.

[6] RAAF HQ DTS signal WH.910T, of 23 FEB 1944, to Austair Washington, stating "Liberators for RAAF will be acceptable unpainted."

[7] RAAF HQ DTS signal T.346, of 29 FEB 1944

[8] RAAF HQ DTS signal T.922, of 21 APR 1944, file 1/501/329 (152A).

[9] RAAF HQ DTS signal A.136, of 27 APR 1944, file 62/4/84; followed by DTS T.236, of 18 May 1944, file 62/4/93 (36A).

[10] RAAF HQ DTS SIG/34, signal T.20/PGM, of 1 MAY 1944.

[11] I Baker, *Aviation History Colouring Book*, Queenscliff, No.55 (2005), p.18. This immediate stripping of 548 and 549's Spitfire VIIIs was evidently unnecessary, as the Instruction had only directed that this change was only to be implemented as and when full refurbishment of their paintwork became necessary. This misreading of the Instruction is detailed below.

[12] 548SQN A50 Unit History, MAY 1944.

Although there is no record in the 549SQN A50, in V Posse, *Together Up There, History of 549 Squadron*, Australian Military History Publications, Sydney, 2003, p.48 records: "The AOC Eastern Area arrived at Amberley [where the aircraft had been assembled by 3AD] to bid the Squadron farewell and on seeing the Spitfires still in their camouflage, he was so enraged that he immediately grounded them and ordered all the paint to be removed forthwith." As only skeleton groundcrew remained, pilots had to assist in the paint stripping and re-applying of markings – several had to be taken to hospital with paint remover in their eyes!

[13] RAAF HQ T.O. AGI Part 3, Section (C), Instruction 1, of 26 MAY 1944, Annex A.

[14] RAAF HQ DTS signal T.799, of 14 OCT 1944, file 1/501/329 (191A).

[15] RAAF HQ DTS SIG/49, signal T.357/PGM, of 19 DEC 1944.

[16] RAAF HQ DTS signal TJ.402, of 4 DEC 1944.

[17] DCAS Minute 1/501/329 Part II (2A) of 26 FEB 1945.

[18] RAAF HQ DTS signal T.340 of 2 MAR 1945; DH advised 8 MAR 1945.

[19] RAAF HQ DTS SIG/52/36, letter 1/501/329, of 9 MAR 1945.

[20] RAAF HQ DTOR Minute of 21 MAR 1945, and letter 1/501/329 Pt II (15A), of 4 APR 1945.

[21] RAAF Command letter RAAFC 2198, 686/3H9, of 27 APR 1945, file 1/501/329 Pt II (29A).

[22] RAAF HQ DRM Postagram TJ.1513 to 4MGHQ and 5MGHQ, of 9 JUN 1945.

[23] RAAF HQ DTS signal T.1628, of 13 JUN 1945, file 1/501/329 Pt II (26A).

[24] D Vincent, *The RAAF Hudson Story, Book Two*, self published, Adelaide, 2010.

[25] A59-102's radar equipment (with the exception of the IFF) was also removed in NOV 1944. A705 231/9/1656 Pt.1 (74A), RAAF HQ postagram TJ.375 (PGM) to RAAF Command and 4CU, of 24 NOV 1944.

[26] RAAF HQ DTS signal QM.952, of 31 AUG 1945, file 1/501/329 Pt II (29A).

[27] HQ 4MG letter 301/15/1 (61A) of 10 OCT 1945, DTS response with "provisional approval" 1/501/329 Pt II (31A), of 18 OCT 1945.

[28] RAAF HQ DTS SIG/71, signal T.1219/PGM, of 13 NOV 1945, file 1/501/329 Pt II (51A).

[29] RAAF HQ AGI 3(C)1 Issue 2 of 3 OCT 1946 superseded the Issue 1 of 26 MAY 1944, and enclosed Diagrams A5524 Sheets 1 to 4 with roundel, serial number, squadron code and fin marking details. RAAF HQ file 1/501/329.

[30] RAAF HQ DTS Minute 1/501/329 (29), of 26 NOV 1945. Other issues considered by DTS were that training aircraft were to continue to be "*Training Yellow*", that target tugs continue to have yellow/black striping, anti-glare panels were required for non-painted aircraft, and "P" in a circle be retained for prototype aircraft, DTS Minute 1/501/329 (31), of 6 DEC 1945.

[31] RAAF HQ DTS Minute 1/501/329 (33), of 19 MAR 1946.

[32] See earlier Canberra, Meteor and Vampire articles in this series.

[33] RAAF HQ DTS Special Instruction Gen/88, TS.1650 (PGM), File 1/501/329 (35A), 1 MAY 1947.

[34] RAAF HQ DTS Special Instruction Gen/90, TS.1708 (PGM), File 1/501/329 (41A), 10 JUL 1947.

[35] RAAF HQ DTS Special Instruction Gen/92, TS.1740 (PGM), File 1/501/329 (46A), 5 AUG 1947.

[36] Baker, No.80 (2014), pp.6, 10.

[37] The RAF Type-D 3:2:1 roundel was promulgated in MAY 1947 by RAF Air Maintenance Order AMO A.413/47; P Lucas, Scale Aircraft Monographs Camouflage and Markings, *RAF Fighters 1945-1950 UK Based*, Guideline Publications Ltd, Luton, 2000, p.52.
[38] E/E.88 A20 aircraft status cards; 481SQN A50 Unit History for JUN 1948.
[39] Baker No.43 (2001), pp.22-23.
[40] Bright colours by RAF AMO A.413/47, Lucas p.52.
[41] HQ RAAF DTS SIG/71 of 13 NOV 1945 para D (3) relating to BCAIR had specified: "Mustang aircraft under the command of 81WG will be treated in accordance with any direction which the AOC may find necessary to issue".
[42] Type-D roundel colours were designated at this stage as *Bright Red* 33B/912 and *Bright Blue* 33B/914, until the UK A.P.1086 'Vocabulary of RAF Equipment' Part 13B, Section 33B *Aircraft Finishes and Paints* integrated the British Standard BS381C for colours. Lucas, p.92.
[43] RAAF HQ DTS SIG/102, TS.1953 (PGM), file 1/501/329 (60A), 28 JUL 1948.
[44] RAAF HQ DTS signal TS.1769, file 1/501/329 (47A), 17 SEP 1947.
[45] Type-D roundel colours were designated at this stage as *Bright Red* 33B/912 and *Bright Blue* 33B/914, until the UK A.P.1086 'Vocabulary of RAF Equipment' Part 13B, Section 33B *Aircraft Finishes and Paints* integrated the British Standard BS381C for colours. Lucas, p.92.
[46] Lucas, pp.54-55.
[47] G Byk, *The Modeller's Guide to the RAAF Mustang*, Red Roo, Melbourne,1996, p.91 shows A68-759 FA-U belly-landed at Bofu on 22 FEB 1947; the E/E.88 confirms this was the last flight of the aircraft.
[48] HQ RAAF D/OPS Minute 33 on file 1/501/329 to DCAS, 19 MAR 1946.
[49] HQ RAAF D/OPS Minute 38 on file 1/501/329 to DTS, 17 SEP 1946.
[50] RAAF HQ DTS Diagram A5524 Issue 2, 10 OCT 1946; and RAAF HQ DTS Minute 12 para.2(k) of 9/1/1595, 4 AUG 1947.
[51] RAAF HQ 9/1/1595 (25A) DTS review of RAF AMO A.413 changes, 2 DEC 1947, para (ix).
[52] B Pattinson, *Kingfisher in the Antipodes*, Red Roo, Melbourne, 1998, p.43.
[53] The colours were not defined under the British Standard (BS) 381C specifications – *Roundel Blue* BS381C-110, and *Post Office Red* BS381C-538 – until 1966. Lucas, p.92.
[54] RAAF HQ DTS SIG/96, TS.1840, File 9/1/1595, para.D(8a), 14 JAN 1948.
[55] *Bright Red* was also *Post Office Red* BS381C-538, which later became *Cherry*. Lucas, p.88.
[56] AEI Gen Pt 2, Sect 1, Instruction No. 9, 31 MAY 1951, App D, Sheet 5.
[57] AEI Gen Pt 2, Sect 1, Instruction No. 11, Drawings A5524 Sheets 1 and 4, JAN 1951.
[58] DEF(AUST)572 '*Insignia (Defence Aircraft)*', MAR 1975, A/L 1 JUL 1977, Fig.1. More recently in 2011, these same colours are defined in the AAP.7021.004-1(AM1) as Australian Standard (AS) R15 *Crimson* and AS B13 *Navy Blue*, but still accord with the overseas BSI and FS595 standards; Australian Air Publication (AAP) 7021.004-1(AM1) Sect 2, Chap 1, Ann G diagram p.1G-1, dated 4 JUL 2011. This authority lists the following equivalents standards for our roundel colours – AS R15 *Crimso*n, BS381C-538 *Cherry Red*, FS595-11136; AS B13 *Navy Blue*, BS381C-105 *Oxford Blue*, FS595-15048.
[59] *The Kangaroo Roundel That We Love*:
http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%202016%20Spring.pdf
[60] *The Age* Melbourne, p.15, 13 Sep 1955, quoted in *AHSA Newsletter*, Vol 4, No 2, 1988.
[61] RAAF HQ File 470/1/11 para.4, 1956, incorporating Air Board Agenda 12486, 25 Mar 1955.
[62] RAAF HQ File 470/1/11 para.6, 1956.
[63] D Muir, *Southern Cross Mustangs*, Red Roo, Melbourne, 2009, p.29.
[64] E/E.88 A68 aircraft status cards: CA-18s to Korea A68-121, -123, -125 and -130.
[65] E/E.88 A68 aircraft status cards and 77SQN A50 Unit History: A68-500 and -559 to 76SQN, A68-551 and -557 to 77SQN, A58-511 and -518 to 82QN.
[66] E/E.88 aircraft status card for A68-799.
[67] For policy details of RAAF aircraft serial numbering, re 'consecutive' or 'aircraft c/n', see *ADF Serials Telegraph* Vol.5 Issue 3, Spring 2015:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202015%20Spring%20Vers%20Fin.pdf
[68] Muir, p.90.
[69] Baker, No.43 (2001), No.77 (2013), No.80 (2014), No.82 (2014).
[70] Muir, p.84.
[71] Specified by *CAC Overhaul Manual*, 1 AUG 1945, Chap 10, cited in Muir, pp.64 and 86.
[72] Lucas, pp.54-55.
[73] E/E.88 aircraft status cards show that eight more CAC Mk.23 Mustangs were allotted to 77SQN: A68-124, -129, -131, -157, -182, -184, -185 and -186. These were shipped from Melbourne to Sydney on the SS *Nankin* in OCT 1950 but were not immediately required so were stored in NOV 1950 at 2AD Richmond. The other four aircraft for 77SQN (A68-121, -123, -125 and -130) then sailed from Sydney aboard SS *Tregarthen* in DEC 1950, and were received by 91 Wing at Iwakuni in FEB 1951.
[74] Muir, pp.107-109.
[75] RAAF HQ Director of Technical Services (DTS), *Special Instruction General/92 (SIG/92),* of 5 AUG 1947, TS.1740/PGM, RAAF HQ file 1/501/329(folio 46A).

[76] Muir, p.99. Baker (No.80 p.9) notes that while the requirement for squadron codes on RAAF aircraft was cancelled in AUG 1947, 81WG within BCAIR could make its own marking decisions. For home-based RAAF aircraft, RAAF HQ DTS SIG/92, TS.1740 of 5 AUG 1947 stated: "Squadron code letters are no longer required and are to be deleted from aircraft."
[77] P Anderson, *Mustangs of the RAAF and RNZAF*, Reed, Sydney, 1975, p.34.
[78] Full details are provided in Muir, pp.97-102.
[79] First identified and illustrated by Muir, see *Southern Cross Mustangs* p.136.
[80] Muir, p.146.
[81] 77SQN A50 Unit History, 18 SEP 1947: "All aircraft spinners were painted white in preparation for Fire Power Demonstrations".
[82] Muir, p.94.
[83] Muir, p.219.
[84] Baker, No.82 p.6. These US colours are in accordance with ANA Bulletin No.157 of 28 SEP 1943; R D Archer & V G Archer, *USAAF Aircraft Markings and Camouflage 1941-1947*, Schiffer, Atglen PA, 1997, p.327.
[85] Byk, p.16.
[86] 77SQN A50 Unit History of 18 SEP 1947: "All aircraft spinners were painted white in preparation for Fire Power Demonstrations". The other squadron A50s do not record this: photos show 77SQN with white, 82SQN with dark blue, and 76SQN with red.
[87] Muir, p.233; Byk, p.92.
[88] Muir, p.233; Baker, No.80 (2014), p.9.
[89] 77SQN A50 Unit History of 1947: 31MAR47 took command of 77SQN; A68-750 flown on 77SQN APR 1947 to OCT 1947.
[90] Byk, p.240.
[91] A68-72 (perhaps GA-A), A68-78 (GA-B) and A68-80 (perhaps GA-C) on 15 AUG 1946, these squadron 'A' and 'C' codes speculatively based on the first three aircraft received; then A68-57 on 19 AUG 1946; and A68-39, -42, -50, -54, -55, -56, -58, and a 12th (possibly A68-69) on 18 SEP 1946; however aircraft were swapped within 78WG. 75SQN A50 Unit History Aug-SEP 1946.
[92] Muir, p.86.
[93] E/E.88 A68 Mustang status cards.
[94] Muir, p.148. Photos show gold metallic spinner dome, not Golden Yellow on A68-48.
[95] The 24SQN A50 Unit History records that on 16 APR 1951 "four Mustangs arrived from Tocumwal", but this is not substantiated by any E/E.88 A68 Mustang status cards. Subsequently, four E/E.88s record that on 19 JUN 1951 "four Mk.23 Mustang aircraft to be selected and allotted by 1AD Det 'B' Tocumwal for 24SQN – these aircraft are recorded as: A68-127, -150, -164 and -177, all of which were received by 24SQN on 26 JUL 1951.
[96] 24SQN A50 Unit History 1951-1960; and Mustang E/E.88 A68 status cards.
[97] This technique was relatively simple, with the cable and target being pulled off the ground by brute force and (after each operation) released beside the runway before landing. However, in the 1960s two civilian target towing Mustangs (VH-BOY and VH-BOZ) were fitted with the more complex Beaufighter 'Type B' target winch protruding through their starboard sides. See Muir p.191-193 and p.200-202 for details of all systems.
[98] The *Mustangs Mustangs* website acknowledges that **A68-687** (44-13009) did reach the AURI, but with no positive identity.
http://www.mustangsmustangs.com/p-51/who/case/48
[99] P Coggan, *Mustang Survivors*, Aston Publications, Bucks, 1987, p.157: lists **A68-686** (44-13006) to US for restoration as N51RK.
G Goodall, *Warbird Directory*, v.6, 10 OCT 2017: records **A68-687** to the US as part of "package of 15 to 20 AURI P-51 airframes & spares, all shipped ex Surabaya, Indonesia, 21 MAR 1979" for restoration.
http://www.goodall.com.au/warbirds-directory-v6/north-american.pdf
[100] The AWM photo collection has images of two aircraft handed-over to ROKAF at Iwakuni on 22 NOV 1952: one aircraft is **A68-723**, and claims that "**A68-729** was also transferred on this day, and is most likely the aircraft behind A68-723". Also, the E/E.88 status card claims that **A68-806** was also prepared for the ROKAF on this date (possibly as a spare, a back-up, which normally happens in diplomacy, in case one of the first two aircraft went unserviceable?). In the event however, the E/E.88 for A68-729 states on 11 NOV that for the ROKAF "arrangements made to transport from Iwakuni to Korea by LST", but a year later on 8 NOV 1953 A68-806 "not required by ROKAF and arranged local disposal to scrap metal". The drawing (from *Southern Cross Mustangs)* is based on two images of ROKAF '8' which confirm that markings are as shown. Small differences between A68-723 and A68-729 and documents relating to the handover suggest that this is probably the latter airframe. A68-806 is believed to have been marked as ROKAF '18' – thanks to David Muir for this.
[101] J Dienst & D Hagedorn, *F-51 Mustang in Latin American Air Force Service, Aerofax Datagraph 1*, Aerofax, Earl Shilton UK, 1985, p.13.
[102] Sources which have been helpful:
http://www.mustangsmustangs.net/p-51/survivors/written_off
http://www.mustangsmustangs.com/thehangar/index.php?topic=950.0
http://www.goodall.com.au/warbirds-directory-v6/north-american.pdf
http://www.joebaugher.com/usaf_serials/1944_1.html http://www.joebaugher.com/usaf_serials/1944_6.html
http://www.joebaugher.com/usaf_serials/1945.html

[103] As often happens in correlating serial numbers, the four ex-RAAF P-51Ds that became FAB-501 to FAB-504 has been confused: Dienst & Hagedorn give numbers in 1985 as A68-602, -650, -601 and -649 (pp. 24-25, which are clearly incorrect by not agreeing with E/E.88 status cards), and also with a common mismatch over the provenance of FAB-501 and FAB-504.
On the Mustangsmustangs.com website, 'Swiss Mustangs' provides the following tie-ups:
http://www.mustangsmustangs.com/thehangar/index.php?topic=950.0
The most recently updated source is Joe Baugher's USAAF website providing the serials in the order listed:
http://www.joebaugher.com/usaf_serials/1945.html
[104] J Dienst & D Hagedorn, p.13.
[105] Some details of American Aeronautics activities are described in this attachment:
http://caselaw.findlaw.com/ca-court-of-appeal/1808290.html
[106] J Hopton, *Pots, Pans and Meteors*, Clyde North Aeronautical Preservation Group, Melbourne, 1994, pp.16-17.
[107] Geoff Goodall's Aviation History Site, *Emu Atomic Mustangs:*
http://www.goodall.com.au/photographs/emu-mustangs/emumustangs.html
[108] D Vincent, *Mosquito Monograph*, self published, Adelaide, 1982, p.211.
[109] Baker, No.25 (1995) p.4.
[110] DH had recommended the use of overall silver dope for better protection from the elements in the tropics for non-PR Mosquitoes at DCAS Minute 1/501/329 Part II (2A) of 26 FEB 1945. DTS advised DH that "BALM Camouflage" was to be replaced by two spray coats of S.13809 *Aluminium*; DTS Memo T.S.7 496/45 of 8 MAR 1945, file 1/501/329 Pt II (3A).
[111] Baker, No.81 (2014) p.1.
[112] DCAS Minute 1/501/329 Part II (2A) of 26 FEB 1945.
[113] RAAF HQ DTS signal T.340 of 2 MAR 1945; DH advised 8 MAR 1945.
[114] RAAF HQ DTS SIG/52/36, letter 1/501/329, of 9 MAR 1945.
[115] 1SQN A50 Unit History for 24 MAR 1945: "The first all silver aircraft came off the lines after exceptionally good work by the ground staff. It is estimated that 2 aircraft duly completed will be finished daily."
[116] Baker, No.78 (2013), p.11.
[117] Most 1SQN codes are from Vincent, *Mosquito Monograph*.
[118] Vincent, p.191.
[119] US K.17 cameras had been acquired for the P-43 Lancers serving with 1PRU. NAA CRS A11093 452/A56, RAAF Command file 1101/1/E dated 23 MAR 1943.
[120] Vincent, p.245.
[121] RAAFHQ DTS, AEIG Instruction No.9, 31 MAY 1951,Annex D; also cited in P Malone & G Byk, *Understanding RAAF Aircraft Colours*, Red Roo, Melbourne, 1996, p.39.
[122] Baker, No.25 (1995) p.4.
[123] Baker, No.81 (2014) p.1.
[124] J Bennett, *Highest Traditions, History of 2 Squadron RAAF*, AGPS, Canberra, 1995, p.260.
[125] These two images of A52-177 and A52-313 are from Geoff Goodall's *Aviation History Site*, 20 DEC 2017:
http://www.goodall.com.au/australian-aviation/dh98/civilmosquito.html
[126] Hopton, p.32.
[127] Baker, No.43 p.16; and No.80 pp.5, 12.
[128] RAAF HQ Air Member for Engineering & Maintenance letter of 18 OCT 1945, RAAF HQ file 1/501/329(folio 31A), in response to No.4 (Maintenance) Group query of 10 OCT 45 (folio 30A).
[129] RAAF HQ Director of Technical Services (DTS), *Special Instruction General/71 (SIG/71),* of 13 NOV 1945, TS.1219/PGM, RAAF HQ file 1/501/329(folio 51A).
[130] D Vincent, *Catalina Chronicle*, Catalina National Committee, Adelaide, 1978, pp.93-4.
[131] 11SQN A50 Unit History for JUL 1948. 11SQN disbanded 15 JAN 1946; 11(GR)SQN formed from SAR Wing 1 JUL 1948.
[132] Baker, No.81 (2014), p.2.
[133] 11SQN A50 Unit History, AUG-SEP 1948. It was unfortunate over this period that 11SQN A24-381 crashed at Lord Howe Island on 28 SEP 1948, with the loss of seven lives.
[134] Baker, No.81 (2014) p.2.
[135] While Tech Diagrams A5524 of 19 JAN 1951 had specified the fin flash as 24" high and 22" wide (an odd width which has to be divided by 3 for equal red, white and blue), contemporary images tend to suggest flashes were applied 24" x 24".
[136] Baker, No.43 p.16; and No.80 pp.5, 12.
[137] Geoff Goodall's Aviation History Site, *Ex RAAF Catalinas*, 5 MAR 2017. On 29 SEP 1952, the final 23 Catalinas on RAAF strength were offered for sale by the Department of Supply. All were located at RAAF Rathmines where most had been in open storage for some time and were not in airworthy condition:
http://www.goodall.com.au/australian-aviation/civil-catalina-1/Civilcatalinas.html

End Notes: Getting the RAAF Numbers right in WW2 Part 1 by Gordon R Birkett @2017

[138] https://en.wikipedia.org/wiki/Squadron_(aviation)

[139] First job was a fact finding trip to Italy, France, Germany, Czechoslovakia, Holland, England and the United States. The Company and aircraft selected eventually would be the North American Aircraft Corporation of California, USA with its low wing metal monoplane: The NA33. This would be the basis of the CAC CA-1 Wirraway.

[140] The Rolls-Royce Griffon is a British 37-litre (2,240 cu in) capacity, 60-degree V-12, liquid-cooled aero engine designed and built by Rolls-Royce Limited. In keeping with company convention, the Griffon was named after a bird of prey, in this case the griffon vulture. Design work on the Griffon started in 1938 at the request of the Fleet Air Arm, for use in new aircraft designs such as the Fairey Firefly. In 1939 it was also decided that the engine could be adapted for use in the Spitfire. However, development was temporarily put on hold to concentrate efforts on the smaller Merlin and the 24-cylinder Vulture, and the engine did not go into production until the early 1940s. The Griffon was the last in the line of V-12 aero engines to be produced by Rolls-Royce with production ceasing in 1955

[141] Some of these aircraft would fill in Aircraft Establishment Gaps for second line Squadrons when Japan commenced her war in the Pacific late 1941.

[142] Also included was the terminology of a "Reserve Squadron" within Service Flying Training School/Operational Training Units, that with a level of pilot and crew competency, perhaps with new and tour expired crews, these could provide a surge or replacement aircraft with crews for existing units or act as additional first line Squadrons at times of crisis.

[143] Australian War Cabinet Agendum No 311/1941 . Purchase of Additional 11 P.B.Y. Flying Boats. Since the current No 11 Squadron (GR) would increased to 9 IE/IR strength, an adequate reserve from the remaining nine aircraft would be enough to form a reserve Squadron to assist in performing patrols along the east coast and near Tasmania. At this time German Q Ships were raiding our coast and laying mines. This Reserve Squadron, was formed on the 1st August 1941, became No 20 Squadron (GR) and was actually based at Port Moresby. Both Squadron's Establishments remained at 4 IE/2 IR strengths though, supplemented with four Empire Class C Flying Boats .

The Hudson position will then be as follows.

G. R. Squadron (a)	Present Strength (b)	Full Estab. (c)	Additional Number of Aircraft Required. (d)
Existing Squadrons:			
No. 1 G.R. - Malaya	18 (12 +6)	18 (12 +6)	-
No. 2 G.R. - Laverton	12 (9 +3)	18 (12 +6)	6
No. 6 G.R. - Richmond	12 (9 +3)	18 (12 +6)	6
No. 8 G.R. - Malaya	18 (12 +6)	18 (12 +6)	-
No.13 G.R. - Darwin	12 (9 +3)	18 (12 +6)	6
No.14 G.R. - Pearce	12 (9 +3)	18 (12 +6)	6
No. 7 G.R. - Darwin (temporarily - (later to (Bairnsdale)	Nil	18 (12 +6)	18
No. 22 G.P. - Amberley (later Archerfield)	4 (3 +1)	6 (4 +2)	2
No. 24 G.P. - Townsville	4 (3 +1)	6 (4 + 2)	2

TOTAL HUDSONS REQUIRED - 138 (sum of column (c))

Hudsons Available.

Present G.R. Squadrons	92	(sum of column (b))
Armament Training Station (Towing Target)	2	
	94	(includes 2 allotted to A.P.C. for repair)
On order from U.S.A.	52	
TOTAL HUDSONS AVAILABLE	146	

[144] Dated 06.12.1941

[145] There were also 3 RAAF DH-82A Tiger Moths (**A17-293/296/297**) held as communication aircraft in Malaya prior to December 1941, usually singularly allocated to each squadron mentioned. Some of these may have been sequester to MAF and camouflaged post December 1941

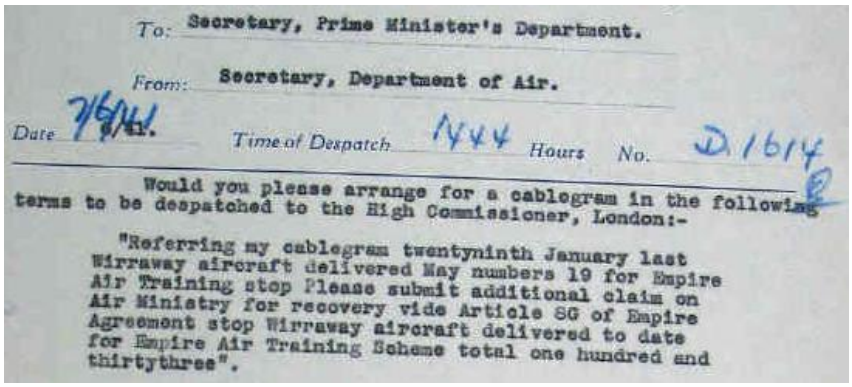
[146] The formation of this unit is confusing. In March 1942 this Establishment was to or did include some thirty-eight Wirraways to train NEI Pilots.

Refer 13 Examples found: A20-235/259/261/265/270/271/277/282/395/396/426/427/428 etc Rec 06/03/42, sent on to 7SFTS 30/03/1942. Peter Boer states

- 1 March arrived 6 SFTS c. 84 student pilots ML/KNIL ex Boissevain, also Captain Asjes (ML detachment CO) plus four ML flying instructors. Plan was to train some 40 students of ML on Anson ac and remainder on Wirraway.
- 7 March first course of c. 30 students started training on Anson ac, unknown number on Wirraway ac.
- 24 March final day of training, ML students on Anson as well as on Wirraway ended training on this day. Flown on average c. 20 hrs on Anson but on Wirraway only a few hrs per student due to low serviceability of ac.

[147] . **A little known fact:** Records show that some 133 Wirraways were actually paid for by the United Kingdom under article 80 of the EATS, by June 1941.

CAC and Australian Government in late June 1941 secured an order for a further two hundred and forty-five (245) Wirraways to be delivered to a requirement under Article 80 of the EATS. This contract was cancelled in favour of the 100 aircraft production build of the CAC Boomerang in February 1942



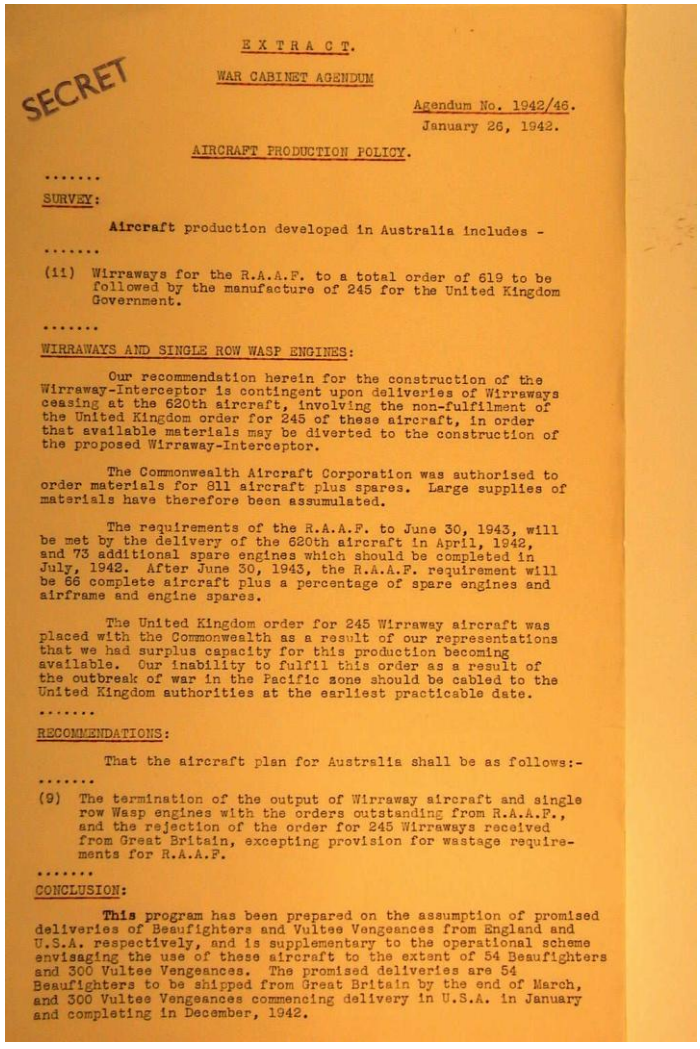
To: Secretary, Prime Minister's Department.

From: Secretary, Department of Air.

Date 7/6/41. Time of Despatch 1444 Hours No. D.1614

Would you please arrange for a cablegram in the following terms to be despatched to the High Commissioner, London:-

"Referring my cablegram twentyninth January last Wirraway aircraft delivered May numbers 19 for Empire Air Training stop Please submit additional claim on Air Ministry for recovery vide Article 8G of Empire Agreement stop Wirraway aircraft delivered to date for Empire Air Training Scheme total one hundred and thirtythree".



SECRET

EXTRACT.

WAR CABINET AGENDUM

Agendum No. 1942/46.
January 26, 1942.

AIRCRAFT PRODUCTION POLICY.

.....

SURVEY:

Aircraft production developed in Australia includes -

.....

(11) Wirraways for the R.A.A.F. to a total order of 619 to be followed by the manufacture of 245 for the United Kingdom Government.

.....

WIRRAWAYS AND SINGLE ROW WASP ENGINES:

Our recommendation herein for the construction of the Wirraway-Interceptor is contingent upon deliveries of Wirraways ceasing at the 620th aircraft, involving the non-fulfilment of the United Kingdom order for 245 of these aircraft, in order that available materials may be diverted to the construction of the proposed Wirraway-Interceptor.

The Commonwealth Aircraft Corporation was authorised to order materials for 811 aircraft plus spares. Large supplies of materials have therefore been assumulated.

The requirements of the R.A.A.F. to June 30, 1943, will be met by the delivery of the 620th aircraft in April, 1942, and 73 additional spare engines which should be completed in July, 1942. After June 30, 1943, the R.A.A.F. requirement will be 66 complete aircraft plus a percentage of spare engines and airframe and engine spares.

The United Kingdom order for 245 Wirraway aircraft was placed with the Commonwealth as a result of our representations that we had surplus capacity for this production becoming available. Our inability to fulfil this order as a result of the outbreak of war in the Pacific zone should be cabled to the United Kingdom authorities at the earliest practicable date.

.....

RECOMMENDATIONS:

That the aircraft plan for Australia shall be as follows:-

.....

(9) The termination of the output of Wirraway aircraft and single row Wasp engines with the orders outstanding from R.A.A.F., and the rejection of the order for 245 Wirraways received from Great Britain, excepting provision for wastage requirements for R.A.A.F.

.....

CONCLUSION:

This program has been prepared on the assumption of promised deliveries of Beaufighters and Vultee Vengeances from England and U.S.A. respectively, and is supplementary to the operational scheme envisaging the use of these aircraft to the extent of 54 Beaufighters and 300 Vultee Vengeances. The promised deliveries are 54 Beaufighters to be shipped from Great Britain by the end of March, and 300 Vultee Vengeances commencing delivery in U.S.A. in January and completing in December, 1942.

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[148] A third contract for forty-nine Hudson MKIs s was placed in 1940 for delivery in early 1941. These were diverted to the RAF Coastal Command during 1941 with a promise reverse diversion in late 1941. This was the fourth contract of fifty-two similar engined Mk IVs.

[149] (Lockheed Hudson **A16-1 to 52** were fitted with Hamilton Standard Hydromatic two speed hubs and designated Mk I's whereas the second batch **A16-51 to A16-100** were fitted with Hamilton Standard Hydromatic constant speed hubs and designated as Mk IIs in RAAF Parlance, not to be confused with RAF Marks.)

[150] A joint RAF/RAAF OTU at Kluang South Malaya with 11 Wirraways (ex-No 21 Squadron aircraft (**A20-43/44/50/56/58/60/72/85/86/87**)) to be later known as Y Squadron formed from Wirraways on the 10/01/42. (Held by 151 Maintenance Unit with Single Codes per 21Sqn original aircraft individual Letter Codes, with the GA painted over. Only four CAC Wirraways made it back to Australia; **A20-46, A20-51, A20-61** and **A20-84**, on the 16/12/41 by sea (SS Ormiston) to Sydney, then onto 2AD Richmond.

[151] NAA Files: War Section. Brewster, Bermuda. & Vultee Vengeance Aircraft. Part I. Aircraft from USA - Supply - Vultee, Brewster Bermuda aircraft