ADF Serials Telegraph News

News for those interested in Australian Military Aircraft History and Serials

Volume 8: Issue 4: Spring 2018: *Editors and contributing Authors: John Bennett and Gordon R Birkett*

Message Starts: In this Issue**:**

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News Briefs

4 June 2018. The RAAF detachment of F-35A pilots, maintainers and support personnel based at Luke AFB in Arizona has recorded the 1,000th sortie of an Australian F-35A Lightning II. The milestone flight was recorded by one of the RAAF's first two F-35A pilots, SQNLDR David Bell, when he and 3SQN Commanding Officer WGCDR Darren Clare flew together on June 4. The RAAF's 3SQN operates six F-35As at the Integrated Training Center (ITC) where it is embedded with the USAF 56th Fighter Wing (56FW) at Luke AFB. 3SQN is preparing to go through an airworthiness board in the next few months prior to bringing the first two F-35As back to Australia in December.

CO 3SQN with support personnel in front of A35-002 on 4th June after the 1,000th sortie

21 June 2018: An $83 million contract for two special ISREW Mission Gulfstream G550 Airframes has been awarded to L3 Communications by the 645th Aeronautical Systems Group, USAF on behalf of the Australian Government for the RAAF.

11–22 June 2018. 75SQN deployed eight Classic Hornets and 120 personnel to Canada to participate in Exercise 'Maple Flag'. Held at Cold Lake, Alberta, the exercise is the RCAF's largest international training event running from 11 to 22 June. Meanwhile, on **15 June 2018,** Canadian media has reported that Canada has requested the sale now of 25 F/A-18A/B classic Hornets from Australia from 2019 to complement its own force of similar CF-18A/B Hornets. The *Ottawa Citizen* said on 15th June that the number of jets to be acquired by Canada's Department of National Defence has risen from 18 as reported in late 2017, and that the additional seven aircraft would be broken down for spares.

22 June 2018. The NSW Govt announced that the NSW RFS will receive two Army Black Hawk helicopters over the coming years to assist with fires and emergencies across NSW. The TV reporting stated that the two Blackhawks would be modified over the next twelve months, and showed aircraft from 171SQN at Holsworthy, A25-206 and A25-211. These of course may not be the aircraft selected for transfer.

Blackhawk A25-211, with a Fires Services BK-117, at the announcement of two ex-Army aircraft for NSW RFS

23 June 2018. After our list of gifted RAAF AP-3C Orions to museums last issue, now the Aviation Historical Society of the NT has acquired a retired AP-3C for display at the Darwin Aviation Museum. The formal handover ceremony took place at the Darwin Aviation Museum on Saturday 23rd June.

Below is an u**pdate of our May 2018 List of AP-3C Disposals:**

Darwin Aviation Heritage Centre: AP-3C Orion **A9-757** (Bu160757) was handed over on 23 JUN 2018.

SAAM: AP-3C Orion **A9-756** (Bu160756) was received by the South Australian Aviation Museum on 10 DEC 2017, and by the time this is read, should be almost fully assembled and displayed. SAAM will then collect Mirage A3-115 from Edinburgh for display preparation.

QAM: 18 APR 2018 AP-3C Orion **A9-760** (Bu160760) arrived Sunshine Coast Airport, Maroochydore, for subsequent road transport for the 40km to Caloundra for display with QAM.

HARS: HARS Albion Park had already received **A9-753** (Bu160753) on 3 NOV 2017 to fly as VH-ORI; meanwhile **A9-759** (160759) was with HARS at Parkes on 14 APR 2018 for eventual static display.

RAAFM: The RAAF Museum at Point Cook took charge of **A9-751** (Bu160751) on 16 NOV 2017, which has subsequently been hermetically sealed by spraying with a corrosion inhibitor for outdoor storage.

RAAF Edinburgh: According to our *adf-serials* database, **A9-658** (Bu162658) which made its last flight in NOV 2016 is to be a gate guard at RAAF EDN.

AWM: A9-659 (Bu162659) may be earmarked for the AWM in Canberra.

26 June 2018. The Australian Government announced the long awaited order for six Northrop Grumman MQ-4C Triton Surveillance Unmanned Aerial aircraft for ISR missions, at an initial outlay of $1.4bn in the $7bn project. From Minister Pyne's TV interview, it is possible there is scope for an option of a seventh platform. The first RAAF Triton will come into service in mid-2023, with the last due by late-2025. Included in the initial cost is $364 million for infrastructure upgrades at the home base at RAAF Edinburgh, and the forward deployed base at RAAF Tindal. Initially announced in March 2014, the Triton was selected under Project AIR 7000 Ph 1B, and it is unsure at this stage whether this order will negate the option of acquiring a further three P-8A Poseidons (which would have taken that fleet up to 15). With the P-8A equipping 11 Squadron, it is anticipated that the MQ-4C will equip 10 Squadron. Although *adf-serials* had the serial block A50 tentatively allocated for the six aircraft, the Prime Minister's announcement showed a model as "A57-001" – so current serialling policy would probably see our aircraft numbered A57-001 to A57-006.

Projected MQ-4C Triton in RAAF markings – Australian Dept of Defence image

The MQ-4C model with a tail marking showing a representation of the Greek god Triton

29 June 2018: BAE Systems has welcomed the Australian Government's announcement of its selection as the preferred tender for the SEA 5000 program to deliver nine Future Frigates for the Royal Australian Navy. The

BAE Systems' Global Combat Ship is based on Royal Navy's Type 26 frigate and will be called the Hunter class in Australia.

15 August 2018. The CO 3SQN has visited the Lockheed Martin plant at Fort Worth and signed an interior panel of F-35A A35-009 on the 6 July 2018. A35-009 reportedly first flew on 15 August, 2018 followed by A35-010 on 16 August 2018. Meanwhile the ADF confirmed that 10 of its Lockheed Martin-built fighters had been affected by corrosion - issues after the manufacturer failed to use a protective primer during painting. The US Government says the primer issue has to be fixed by a month-long repair process, and had been first noticed during maintenance on a US aircraft late last year when corrosion was discovered on fasteners under fuselage panels.

F-35A A35-007 3SQN markings at Luke AFB Arizona

F-35A A35-009 in 3SQN Markings

12 July 2018: Airbus Defence and Space has successfully demonstrated an automatic air-to-air refuelling (A3R) between two multi-role tanker transports. In a joint operation with the Royal Australian Air Force – which is collaborating with Airbus in development of this pioneering technology – an Airbus company-development A310 tanker performed seven automatic contacts with RAAF's KC-30A **A39-001**.

12 July 2018: Australia will assist the Afghan National Air Force to establish its UH-60 Black Hawk helicopter capability by providing around 20 Australian Defence Force personnel, including aviation advisers and force protection. Australia will also continue to fund the sustainment of Afghanistan's current fleet of Mi-17 helicopters as it transitions to the Black Hawk, through the Afghan National Army Trust Fund. Australia remains the second largest contributor to the Afghan National Army Trust Fund, and has contributed US$520 million since 2010.

PC-21 Activity

23 July 2018. With the arrival on 23 July of CFS Roulettes **A54-019 (HB-HWS) and A54-020 (HB-HWT)** aircraft at East Sale, the next pair in Roulette colours – **A54-021 (HB-HWU) and A54-022 (HB-HWV)** – will probably arrive at East Sale at the end of August after ferry from Stans. Earlier had been the delivery on 25 June 2018 of **A54-017 (as HB-HWQ)** and **A54-018 (as HB-HWR),** both in ARDU markings. Test flying has slowed at Stans due to the European holiday season, and next are Roulettes' **A54-023 (HB-HWW)** and **A54-024 (HB-HWX**), which are due at the end of September. With the delivery of a pair every four/five weeks, by year's end we should have 30 aircraft (of the 49 ordered) on strength.

A54-023 HB-HWW 21 JUN 18 completed, outside at Stans for the first engine runs

RAAF Serial	Ferry Reg	msn	Delivery Details
A54-017	HB-HWQ	250	Noted at Stans 6 FEB 2018 with **ARDU markings;** being prepared for the ferry on 7 JUN, departed 15 JUN. Arrived ESL 25 JUN 18.
A54-018	HB-HWR	251	First noted at Stans 6 FEB 2018 with **ARDU markings,** engine runs at 28 FEB, departed 15 JUN. Arrived ESL 25 JUN 18.
A54-019	HB-HWS	252	16 MAR 2018 completing pre-flight testing, the first with **Roulettes markings.** Arrived ESL 23 JUL 18.
A54-020	HB-HWT	253	Noted at Stans 26 FEB 2018 leaving paint shop with **Roulettes** markings. Arrived ESL 23 JUL 18.
A54-021	HB-HWU	254	Noted at Stans 24th May 2018 **(Roulettes)** ready for final assembly. Due ESL end AUG 18.
A54-022	HB-HWV	255	Noted at Stans 26 FEB 2018 **(Roulettes)** leaving paint shop; ready for final assembly 8 MAY. Due ESL end AUG 18.
A54-023	HB-HWW	256	Seen at Stans 24th May 2018 **(Roulettes)** with A54-021, ready for final assembly. Outside hangar first time on 21 JUN for engine runs, and due ESL probably end SEP 18.
A54-024	HB-HWX	257	Seen at Stans JUN 2018 **(Roulettes)**. Due ESL prob end SEP 18.

24 MAY: A54-021 (HB-HWU) and A54-023 (HB-HWW) ready for final assembly, A54-021 due to arrive end of August

9 July 2018. The NZ Government announced an order for four P-8A Poseidons for delivery from 2023. No.5 SQN RNZAF, which currently operates six P-3K2 Orions, will move from RNZAF Base Whenuapai to the Ohakea base to operate the P-8As.

Meanwhile, on **21 July 2018** an RAAF P-8A Poseidon successfully fired its first Harpoon missile during Exercise RIMPAC 18. The ATM-84J Harpoon missile was launched from the aircraft at the Pacific Missile Range Facility (PMRF), off the coast of Hawaii.

Exercise 'Pitch Black' 27 July - 17 August 2018

Indian Air Force (IAF) contingent on the Darwin BRA tarmac for PB18

Exercise 'Pitch Black 2018' (PB18) kicked off at RAAF Darwin on 27 July, 2018 and was due to run until 17 August 2018. This large biennial air defence exercise is designed to strengthen regional partnerships, improve interoperability and promote regional stability.

It includes many 'firsts' with foreign military participants, the Indian Air Force (IAF), Royal Malaysian Air Force (TUDM), and French Air Force Rafales. Other returnees are the Indonesians (TNI-AU), Thai (RTAF), the Singaporeans (RSAF), with the USAF and USMC.

Participants (with serials noted to date) include:

- three FAF (AdA) two-seat Rafale Bs of Escadron de Chasse 1/4 EC01.004 (4-FM/346, 4-FN/347, and 4-FO/348);
- six TUDM two-seat F/A-18D Hornets of 18SQN (including M45-01, -02, -07, -08), and an A-400M Atlas of 22SQN (M54-04);
- four IAF Su-30MKI Flanker two-seaters (SB-048, -184, 307, -323) of 102SQN, a C-17A (poss CB-8002) of 81SQN, and a C-130J (KC-3807) of 87SQN;
- five RTAF JAS-39C/D Gripens of 701SQN (39Cs noted 70105/401 and 70107/403);
- TNI-AU eight F-16C-52s of 3SQN (including TS-1627, 1633, 1636, 1639 and 1641) and C-130H-30 (A-1327) of 31SQN;
- RSAF five F-15SGs of 149SQN (8306, 8310, 8312, 8327, 8332), six F-16C/D of 143QN (F-16C 611, 615, F-16D 691, 696), G-550 AEW&C of 111SQN, KC-135R (753)of 112SQN, and C-130H (730) of 122SQN;
- USAF ten F-16C of the 80th FS 'Wolf Pack';
- USMC eight F/A-18D and two KC-130J (plus rotary AH-1Z, MV-22B, UH-1Y);
- Canadian RCAF CC-130HT (130339) of 435SQN.

On 30 July 2018, a USAF 80th FS F-16C (Blk40G) (**89-2121**) had an engine emergency on take-off and jettisoned its centerline tank, which landed near Berrimah Road with no injuries.

The Malaysian TUDM contingent

The large RAAF contingent includes twenty F/A-18A and eight F/A-18F, plus C-130Js, C-27Js, C-17A, E-7A, while the tanker KC-30As operating from Amberley or Townsville.

The Malaysian A-400M Atlas M54-04 is interesting, with AAR pods under the wings and its refueling probe

One of Indonesian TNI-AU's new F-16C-52 Falcons TS-1639 on transit to Darwin

French Air Force Rafale 4-FO/348 of EC01.004, with two others, made the long trip from France

Indian AF Su-30MKI 'Flanker' SB-184 with 1SQN F/A-18F Super Hornet A44-224

Malaysian TUDM (RMAF) F/A-18D M45-02

Update: The RAAF EA-18G Growler A46-311 which experienced an engine fire on takeoff from Nellis AFB in January has been officially deemed "***beyond economic repair and has been withdrawn from service***", Defence has confirmed.

RAAF AIRCRAFT MARKINGS SINCE 1950

SQUADRON MARKINGS – PART 9

John Bennett 2018

CAC WINJEEL

Through the photographs of the *adf-serials* imagery database, we have looked at aircraft in the last instalments that were camouflaged in the Second World War, then shed this cover in peacetime to be aluminium or natural metal in the 1950s. The next few episodes will look at the reverse – aircraft in the 1950s and 1960s, that started life a natural metal and ended their service careers in camouflage!! Our first is the CAC Commonwealth Aircraft Corporation (CAC) **Winjeel** which first flew at Fisherman's Bend [1] near Melbourne, in 1951. Australian designed and built, it replaced *both* the Tiger Moth (subject of our last article [2]) and, to some extent, the Wirraway (the article before that [3]) training aircraft in the RAAF. It had literally been the Wirraway that got CAC off the ground. The foresight of Lawrence Wackett in the mid-1930s had established an aircraft industry in this country just in time for war – an industry which through several companies positioned Australia well into the 1950s. Sadly this was allowed to diminish in the late 1960s, and withered in the 1970s.

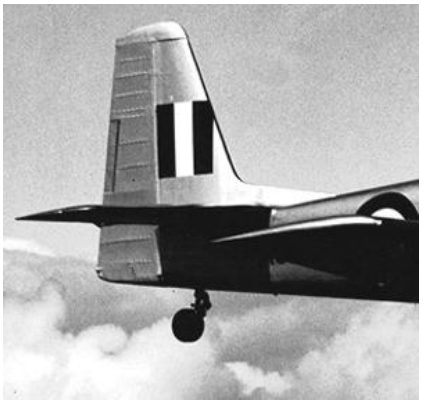
Early 1950s – Wirraways at 1AFTS Point Cook (pre the 1956 kangaroo roundel)

Winjeel Development

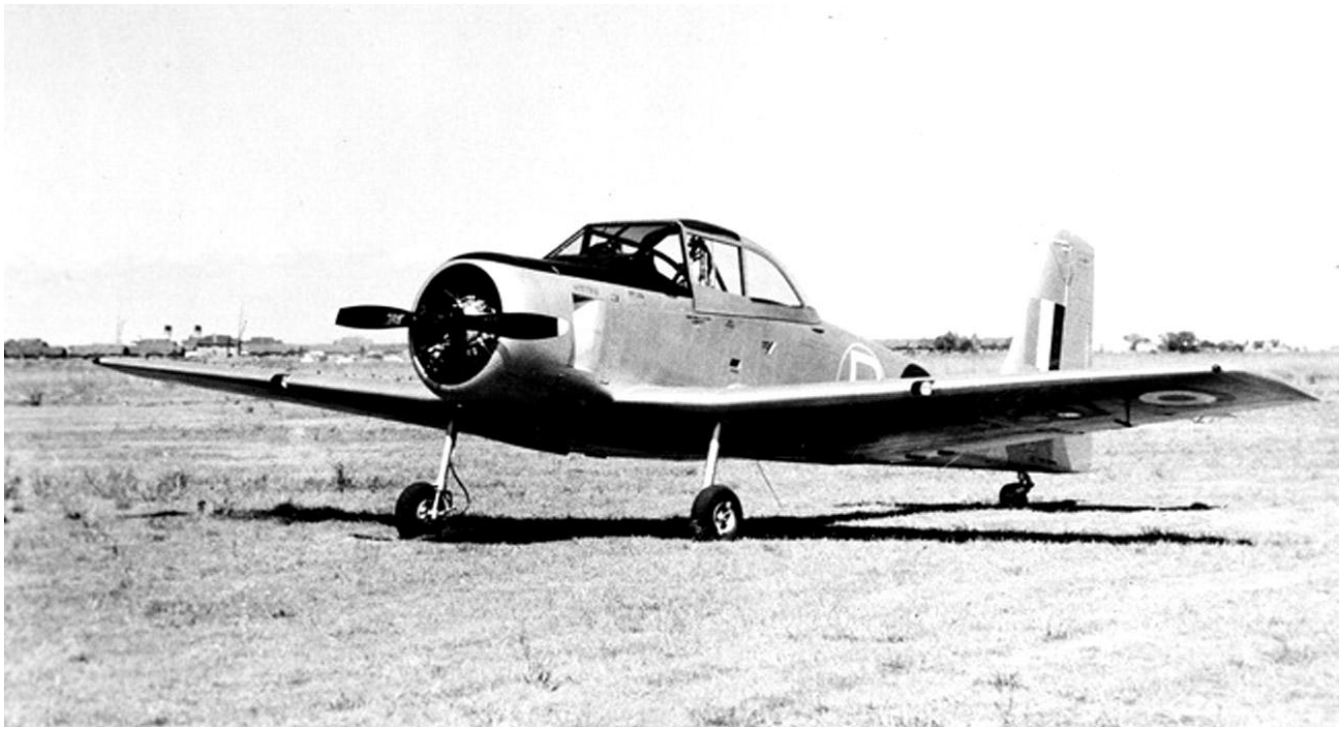
In APR 1949, approval was given for the production of two prototypes *ab initio* trainers. The design, designated the CAC CA-22, was of all-metal construction with fabric-covered control surfaces. It was designed to replace two quite dissimilar types – the Tiger Moth and the Wirraway. The CA-22 had to be docile at low speed, but still have good performance and a similar power-to-weight ratio to the 600-hp Wirraway.[4] Training would be from *ab initio* through to the Mustang and Meteor, and eventually the Sabre. The first CA-22 prototype (A85-618) flew on 3 FEB 1951, with first impressions that the aircraft was pleasant to fly, and in MAR 1952 the new basic trainer was named the Winjeel, an aboriginal word meaning *'eagle'*,[5] or in some translations *'young eagle'*.[6]

Unspinnable Winjeel

After a prolonged series of trials with the two CA-22 prototypes (A85-618, and A85-364 later in 1951), problems became apparent with rudder and elevator effectiveness and an additional major failing for a basic trainer: the aircraft could not be spun.[7] The aircraft would only enter a spiral dive and build up speed very rapidly, but a developed spin was required in the specification so that pilots could be trained in recovery techniques. To rectify this the rudder area was enlarged, a dorsal fin was fitted, and the main effect was achieved by positioning the fin further forward. Also the engine was moved forward by 178mm, or 7" (the proposed CAC Cicada was not developed in time), and the Pratt & Whitney R-985 Wasp Junior was used. This engine change did not lengthen the fuselage, as the moving forward of the fin meant that the rudder now sat on top of, rather than behind, the fuselage. The original CA-22 prototype was 8.8m (28' 10.5") long, the production CA-25 length was 8.55m (28' 0.5").[8]

TAIL DEVELOPMENT		
		
A85-364 CA-22 Without Dorsal Fillet	A85-618 CA-22 Dorsal Fin Design	A85-364 CA-22 Revised Dorsal Fillet

Changes in Winjeel Prototype Tail Design



A85-618 CA-22 Winjeel Prototype

Cicada Engine

In 1948 the RAAF had issued a requirement for this new trainer, and CAC built the two CA-22 prototypes powered by the 335-kW (450-hp) Pratt & Whitney R-985 Wasp Junior. However, the plan was for the Winjeel to be powered by a CAC-designed light engine, the Cicada. This seven-cylinder Cicada radial was basically a single bank of the R-1830 Twin Wasp, but the unit cost was increasing. By 1953 CAC had built two Cicadas and completed 648 hours of running time,

with propellers supplied by de Havillands in Sydney.[9] But as costs blew out, in OCT 1953 the Government ceased further funding of the Cicada as there were sufficient supplies of the cheaper P&W Wasp Junior available. The final decision was to have Winjeels powered by Wasp Juniors – these were all second-hand, and were overhauled in the US prior to delivery to CAC.[10]

A85-401 was the first production CA-25 Winjeel

The fin had been moved forward 965mm (38") making the Winjeel spinnable and reducing overall fuselage length

The Cost Blow Out

In NOV 1951, an order for 62 production Winjeels was placed at a cost of £780,000 ($1.56m) – by JUL 1953 this cost had risen to £3.25m ($6.5m).[11] Accordingly, to reduce costs, several options were considered:

- restricting production to only 54 aircraft, and
- a study of the economic viability of a small production run of the Cicada engine.

As the need for 62 airframes was a firm requirement for RAAF training, this number was not reduced. But the indigenous Cicada and DH propeller plans were cancelled, and the overall program was trimmed with reduced spares to cost £2.329m at SEP 1953 prices.[12] The effect of these savings also impacted the production schedule, and CA-25 production (as the Winjeel was now designated) was delayed as CAC rushed through the Sabre production.[13]

The first production aircraft (A85-401) flew on 23 FEB 1955; the last (A85-462) was completed by CAC in AUG 1957. Entering service with 1BFTS at Uranquinty, all aircraft were delivered over 1955-57 which allowed for the *ab initio* training role to pass from the Tiger Moth to the Winjeel for the 1956 pilots' courses. 1BFTS training moved from Uranquinty to Point Cook in DEC 1958.

Winjeel Serial Numbers

The Winjeel was allocated the RAAF stores identifier 'A85'. The 'last three' of the serial numbers was at a stage of changing policy: the two prototype CA-22 aircraft were purposely "scrambled" for security (the policy at the time of the Korean War), and the CA-25 production trainers were delivered after 1952 when there was a policy of "century" block numbering system[14] (with Winjeels given -400 series numbers), so that an individual aircraft could be identified by its 'last three' alone. Winjeel serial numbering is summarised below.

Serial Number	Policy	Aircraft Mk	Details
A85-618 and A85-364	"Scrambled"	CA-22	**2** - prototypes
A85-401 to A85-462	"Century"	CA-25	**62** - trainer production

Changes in RAAF Flying Training

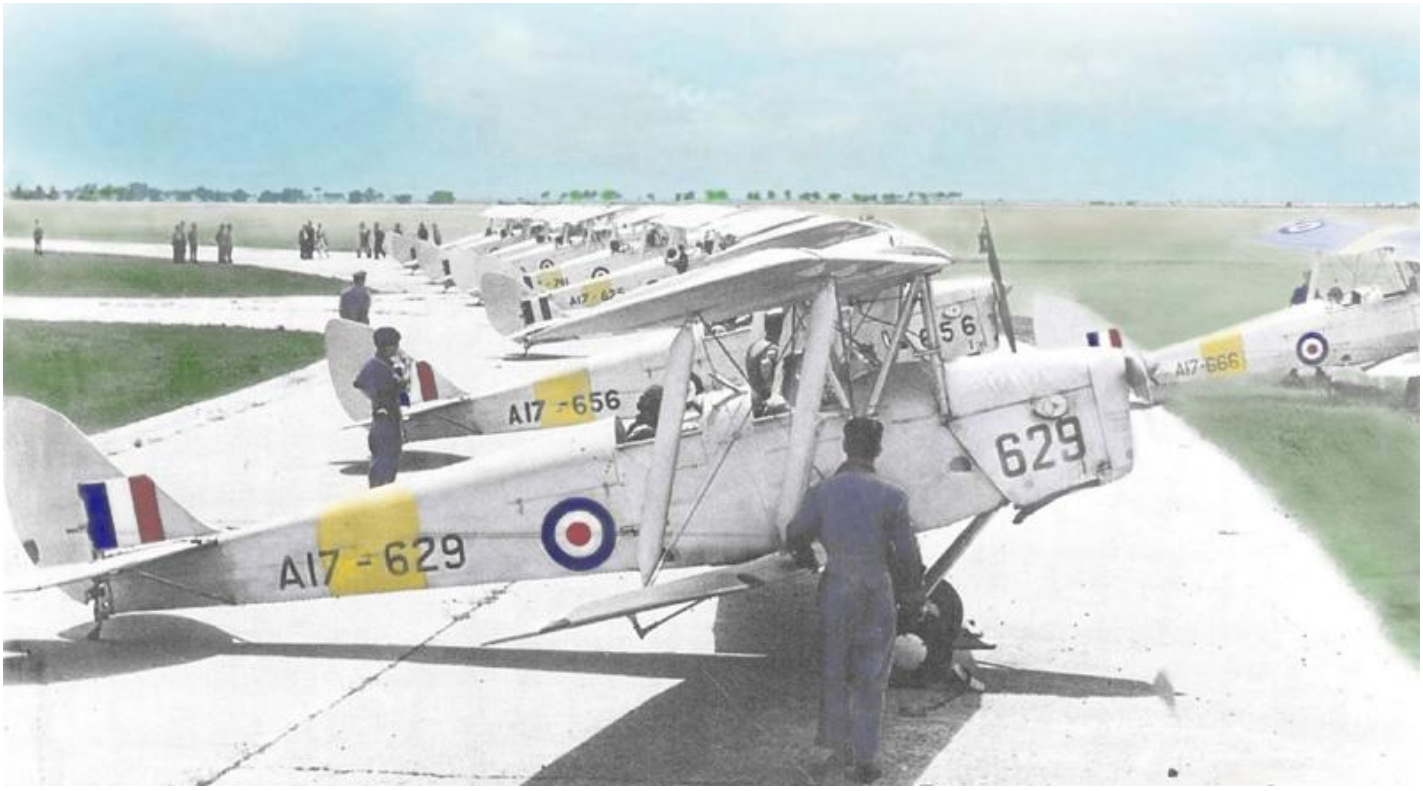
Direct Entry ('Airman Aircrew') Pilot Training

Most Wirraways in the 1950s had been operated by 1 Applied Flying Training School (1AFTS) at Point Cook, and by 1 Basic Flying Training School (1BFTS) at Uranquinty NSW. Postwar pilot training had commenced with No.1 Pilot's Course, but by 1952 big changes were occurring in the syllabus and location. No.8 Pilots' Course is a relevant example:

- No.8 Course started Tiger Moth flight grading at Archerfield in MAR 1952, with successful candidates proceeding to Uranquinty (near Wagga) to continue on Tiger Moths – the first 1BFTS Uranquinty course.[15]
- At the end of MAY 1952, 8 Course transitioned at Uranquinty to more advanced flying on the Wirraway.
- In AUG 1952 the Course then continued on the Wirraway at 1AFTS at Point Cook, graduating in DEC 1952.

1BFTS at Uranquinty ran joint Tiger Moth/Wirraway courses until the Winjeel replaced the Tiger Moth in 1956 – No.22 or 23 Pilots' Courses of 1956 appear to be the first to train on Winjeels. The final applied stage of the course was on Wirraways with 1AFTS Point Cook. No.34 Pilots' Course was the last to fly from Uranquinty in 1958, to graduate from 1AFTS Pearce in SEP 1959. The advent of jet advanced training was to cause a major disruption to that existing system. The Vampire trainer could not operate from Point Cook, and the decision was made to undertake this training at RAAF Pearce WA. As part of this reorganisation, 1BFTS relocated with its Winjeels to Point Cook in DEC 1958. Flying training of instructors occurred at Central Flying School (CFS) at East Sale (having moved from Point Cook in 1947).

The standard trainee pilots undergoing BFTS and AFTS training were referred to as 'airman aircrew' courses. At that stage, pilots up until 1960 would graduate with wings and the rank of Sergeant. They would then become eligible for commission as an officer into their career. College cadets, on the other hand, graduated with wings and a commission.



1957 – Colourised image of the last formation of Tiger Moths about to depart Point Cook for Tocumwal
The last ten Tiger Moths flown from Point Cook to Tocumwal on 9 JAN 1957, for scrapping or disposal through 1AD Detachment 'B' for acceptance on the Dept of Civil Aviation civil register

RAAF College Flying Training

At both Uranquinty and Point Cook were Tiger Moths, until withdrawn at the beginning of 1957 – which appears a little duplicated, because the RAAF College Flying Training Squadron at Point Cook ran its separate flying training. This comprised Tiger Moths for basic flying training, and Wirraways for advanced, or 'applied', flying training.

The RAAF College had been established as a four-year cadet course, for 'future air force leaders'. Over the mid-1950s the College flying syllabus was conducted at Point Cook, and comprised: [16]

- First Year (or the 4th Class) 11.5 hours flight grading, which was subsequently deleted;
- Second Year (3rd Class) nil flying;
- Third Year (2nd Class) basic flying training – 30 hours Tiger Moth, 30 hours Wirraway; and
- Fourth Year (1st Class) applied flying training – 145 hours Wirraway.

At Last – Combined Flying Training

RAAF College Flying Training Squadron was disbanded at Point Cook at the end of 1958, and thereafter basic flying training was conducted by 1BFTS at Point Cook, with the applied flying phase at 1AFTS Pearce. No.8 College Course was the first to graduate on Vampires at Pearce in 1959.[17] The College retained its unique cadet courses until 11 College Course in 1961, after which 12 College Course integrated with the concurrent direct entry course, No.46 Pilots' Course.

To reiterate, over this period the reorganisation of RAAF flying training had been:

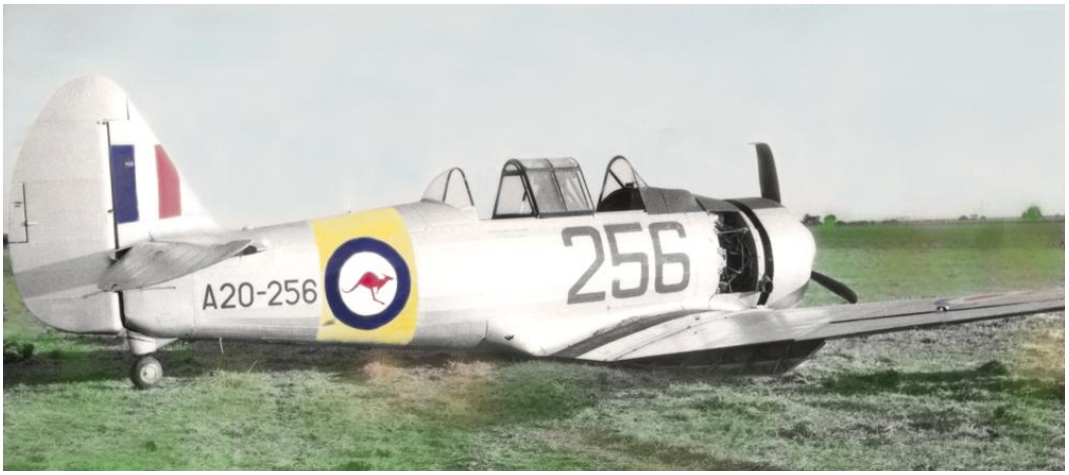
- in MAR 1951, Wirraways at Point Cook were transferred from 1 Flying Training School (then known as 1FTS) to Base Squadron Point Cook – for use by 1AFTS from MAR 1952, and also for training of RAAF College cadets;
- over 1952-56, Wirraways were operated by 1BFTS at Uranquinty together with Tiger Moths, with a longer and more advanced syllabus than when operating solely the Tiger Moth;
- by the end of 1955, 1BFTS Tiger Moths at Uranquinty were being withdrawn, replaced by the RAAF's new basic trainer the Winjeel, from the beginning of 1956;
- in MAY 1958 1AFTS moved from Point Cook to Pearce and re-equipped with Vampires, which had involved major restructuring of both the flying training and the RAAF College syllabi; and
- 1BFTS Uranquinty moved with Winjeels to Point Cook on 17 DEC 1958.

1958 – A85-453 and A85-432 with Wirraway A20-715 [*adf-serials* caption says Uranquinty, but could be Point Cook]

So by the end of 1958, the new flying training organisation was 1BFTS with Winjeels at Point Cook, and 1AFTS with Vampires at Pearce. From 1960, pilot graduates were no longer Sergeants, but were commissioned officers when they received the 'wings'. All pilot training courses – direct entry and College – were consolidated by 1962. This composition of 1BFTS Winjeels and 1AFTS Vampires would remain until 1968-69 with the introduction of the Macchi MB-326H, which was introduced with the intention of 'all-through' jet training.

RETIRED WIRRAWAYS

As Winjeels arrived at Point Cook at the end of 1958, Wirraways were formally retired, marked by a fly-over at Point Cook on 4 DEC 1958, and then ferried to Tocumwal in mid-JAN 1959. Wirraways continued with several CAF units for the next three months, being progressively ferried to Tocumwal for storage up until MAR 1959.



A20-256 Nearly the end of the line – colourised A20-256 crashed at Little River satellite field in JUN 1957

A20-256 was subsequently held in storage at 1AD Detachment 'B' at Tocumwal in 1958, sold for scrap like hundreds of Wirraways – this one to the R H Grant Trading Co. in DEC 1959

A20-674 at Tocumwal NOV 1961 looking almost airworthy, although tailwheels were removed from these aircraft

A20-691 was another from the last disposals list from Tocumwal. Like A20-256 and A20-674, it had been kept in under-cover storage at Tocumwal, and was another still in excellent condition in 1961.

1BFTS Point Cook

Operating at Point Cook from DEC 1958, 1BFTS (which reverted to 1 Flying Training School in JAN 1969[18]) flew the Winjeel until late 1975, with the first CT4 aircraft being received by 1FTS from MAR 1975.[19] 1BFTS Winjeels had received the 'dayglo' treatment to nose, wing and empennage from 1961, and this training scheme remained until withdrawal from basic training service in 1975. The 'last two' numbers of the Winjeel's serial were repeated in large figures on the nose – very handy for training aircraft to identify the guilty cadet indulging in a bit of unauthorised low flying! The nose cowling of the Winjeel was then used for photographing Course Graduations from 1BFTS – up to 62 Course. After that, cowlings had to be 'marked up' for each subsequent course, such as shown in 1967 for **No.66 Course below** (as there was no A86-466!).

Army Pilot Training

Pilot training for the Navy and Army had been integrated with RAAF courses throughout the 1960s. Navy students would accompany their RAAF counterparts through to the 'wings' test at 1AFT Pearce. But it was only necessary for Army students to complete Winjeel flying at 1BFTS (as included above in No.66 Course), and then complete their Army 'wings' training on fixed or rotary wing aircraft at Amberley, or later Oakey. From the late 1960s, Army training was separated from the RAAF training syllabus, and dedicated Army courses commenced.

A85-451 with No.5 Army Course at 1BFTS Point Cook 1970

Major Changes in Training

'**All-Through' Jet Training.** The RAAF's consideration of this concept was for over a decade:

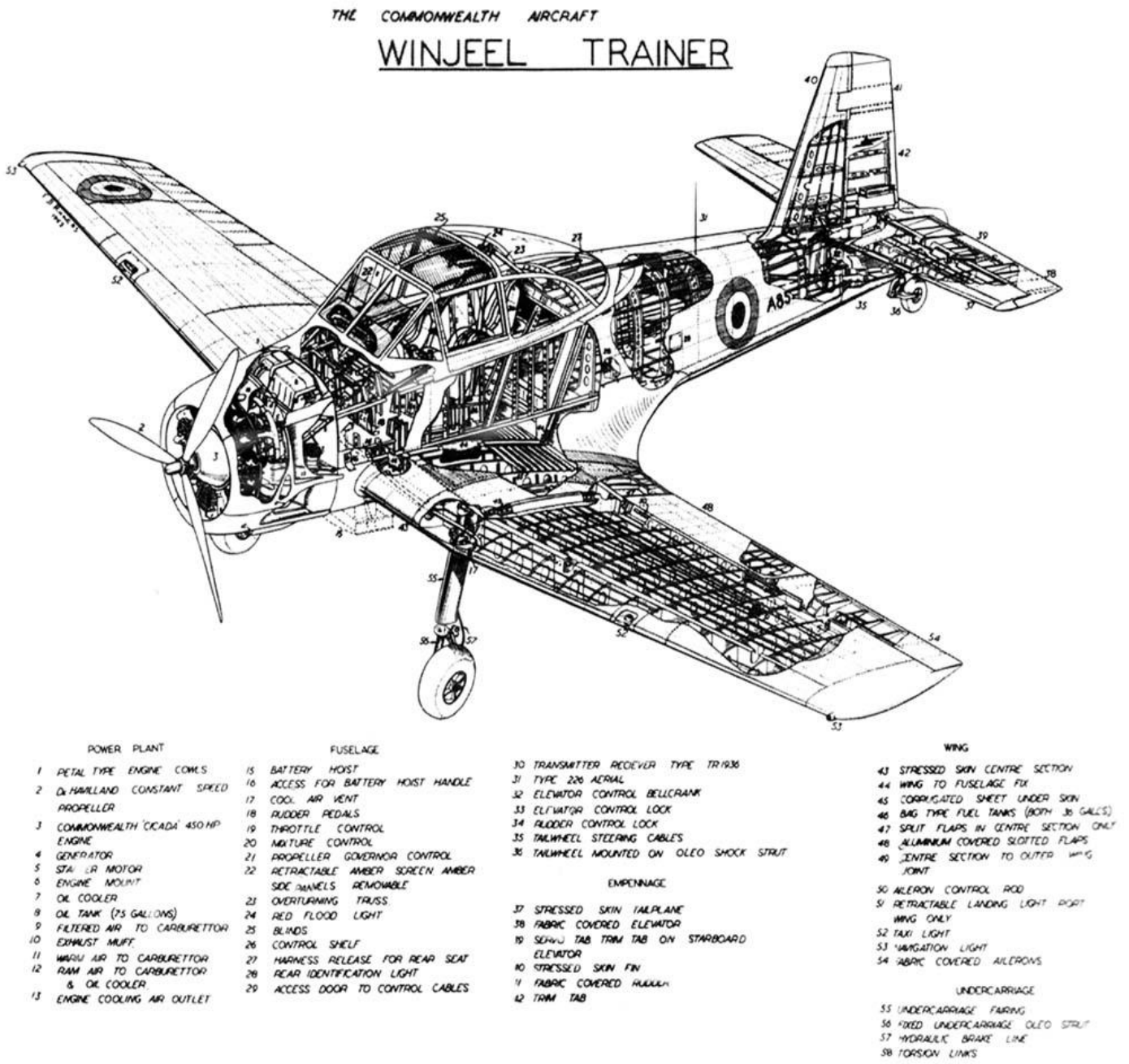
- **1959** – a Hunting Jet Provost T.2 demonstrator (G-AOHD) was leased from that company and flown by 1BFTS for six months' training as A99-001. While two students of No.35 Pilots' Course carried out their *ab initio* training on the 'JP', the trial was not further pursued. A99-001 operated from Point Cook over APR-NOV 1959, and was returned to the local agent de Havilland at Bankstown.[20]
- **1964** – in NOV 1964, the Defence Expansion had announced that 75 jet trainers would be ordered to replace the Winjeel and the Vampire, and these would enter service in 1968. In AUG 1965, the Macchi MB.326H was selected (eventually 97 aircraft would be delivered by 1972).[21]
- **1968** – in 1968, No.68 Pilots' Course was the first to fly the Winjeel-Macchi combination, 69 Course reverted to the Winjeel-Vampire, and 70 Course was the first of only two 'all-through' Macchi courses.[22]
- **1969** – it was soon obvious that an *ab initio* trainer was still required, if only for flight grading. This was because the Macchi was a very easy aircraft to fly, with an 'easy' aircraft it was not possible to seed out all unsuitable candidates in the early *ab initio* syllabus, and the cost involved in this weeding-out process could not be justified on a jet trainer. Consequently Nos.72 to 80 Courses started with a reduced syllabus of some 15 hours of Winjeel flying at Point Cook before Macchis (not normally soloing on Winjeels).
- **1971** – from 1971, No.81 Course's syllabus was increased to over 60 hours Winjeel prior to Pearce. Therefore, once again, the Winjeel would need a replacement.

The 'Parrot'. In JUL 1972, the Minister for Defence announced that the RAAF would receive a total of 37 CT-4s to replace the Winjeel as the basic trainer from 1975. In 1980, a further 14 were ordered.[23]

The CT4 was referred disparagingly as the 'plastic parrot' – there were never such disparaging terms for the Winjeel, as it remained respected as an excellent and demanding basic trainer. The Winjeel then was to have an extended instructional life with the RAAF, continuing in the basic training role until replaced by the CT4 in 1975, and in the FAC training role until replaced by the PC-9 in 1994.

A retro 9-ship image – civilian Winjeels and CT4s retaining a variety of RAAF colours

CAC WINJEEL CUTAWAY



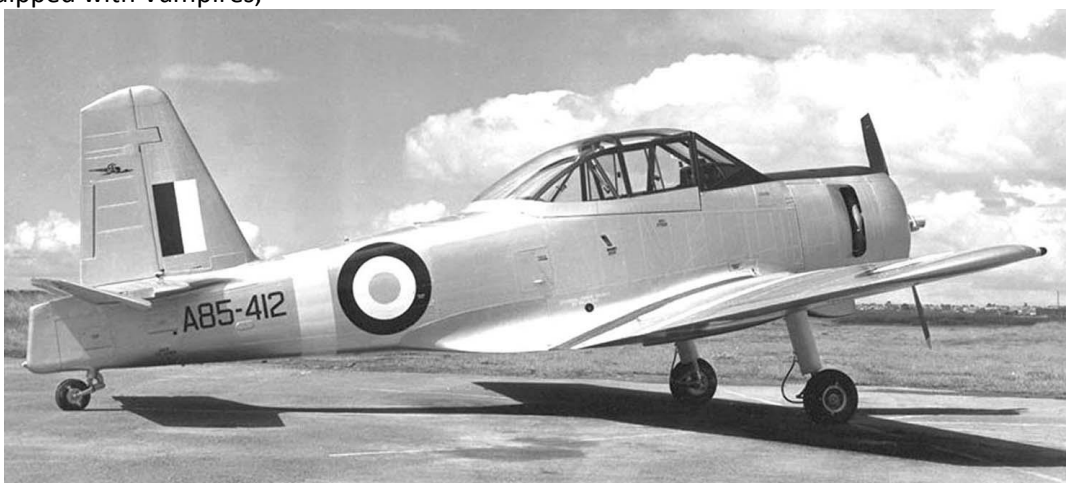
This CAC image shows the originally-planned Cicada radial, before the adoption of the P&W Wasp Junior

Colour Schemes

1950s Silver

Most Winjeels in the 1950s had been operated by 1 Applied Flying Training School (1AFTS) at Point Cook, and by 1 Basic Flying Training School (1BFTS) at Uranquinty NSW. Scheme was overall *Aluminium*, with 12-inch *Trainer Yellow* bands around the mainplane and rear fuselage (behind the roundel, unlike the Wirraway roundel bands). Postwar pilot training had commenced with No.1 Pilots' Course, but as has been related earlier and in previous articles, big changes were occurring in the syllabus and location, affected also by the introduction of the Winjeel, summarised below.

- the first 1BFTS course at Uranquinty was in 1952;
- 1BFTS Tiger Moths at Uranquinty were withdrawn at the end of 1955, replaced by the Winjeel, which moved to Point Cook in DEC 1958;
- with Point Cook unsuitable for jet operation, 1AFTS had moved from Point Cook to Pearce in MAY 1958 and re-equipped with Vampires;



Winjeel A85-412 in overall *Aluminium* prior to delivery to the RAAF in 1955

- 1BFTS Point Cook was retitled 1FTS in 1969, and 1AFTS Pearce became 2FTS – RAAF plans from 'all-through' jet training in 1969 will be addressed in our next instalment.

Dayglo

Previous articles have addressed the use of dayglo on individual RAAF aircraft types – the Vampire[24] and the Dakota[25]. The Winjeel initially received the dayglo treatment at 1BFTS Point Cook from APR 1961 under Winjeel Modification No.52, which typically took two weeks.[26] This was initially conducted by a "CAC working party" at BFTS – the first to be painted over APR/MAY 1961 were CFS aircraft A85-424, -428, -429, -430 and -445.[27] Subsequently 1BFTS 'dayglo-ed' its fleet, and also Winjeels of 10SQN, 34SQN, 2AD/38SQN, 1ATU and ARDU. RAAF Winjeels retained their dayglo until retirement from the training role in 1975.

The standard post-1961 dayglo 1BFTS Winjeel – the only unit marking was a BFTS badge on the port side

The 'dayglo process' has been examined in detail in our previous Part 5 in this series on the Dakota.[28] **'**Dayglo' was a brand name of the daylight fluorescent coating for pigments, and other products, that exhibited fluorescence in daylight – i.e. a pigment that absorbs and reflects more light than conventional colours, resulting in brighter and more powerful shades.

A common scene at 1BFTS Point Cook in the mid-1960s – a few aircraft had the unit badge on the starboard side

RAAF Introduction of Dayglo. The first large silver aircraft to receive dayglo treatment in MAY 1959 appears to have been two C-47B Dakotas – A65-80 (a Navigation Trainer of School of Air Navigation), and A65-81 painted in preparation for its tour for the Antarctic 1959/60 expedition with the ANARE. In 1960, RAAF Dakotas across the fleet received dayglo, followed by training Winjeels and Vampires in 1961. Also ATU Bristol 170 Freighters, 36SQN C-130A Hercules, and 34SQN VIP Convair Metropolitans received the dayglo treatment, but by 1965 this was generally being removed.

The Application of Dayglo. Applying dayglo was time consuming, requiring two coats of white primer undercoat to provide the reflectivity, three of the fluorescent orange, and three clear sealer coats, each at prescribed intervals. An RAF Air Publication directions for the application of dayglo provided details of this process.[29]

The dayglo process – a Winjeel prepared with white primer prior to application of coats of dayglo *Blaze Orange*

What was Dayglo. Bright orange colours were developed in the 1950s into a fluorescent bright colour light-reflective paint called 'dayglo'. Dayglo's fluorescent pigments, which were a new development of pigments based on fluorescent dyes and polymeric materials, were designed to absorb various light frequencies (visible and invisible to the human eye) and re-emit them, producing intense visible colors that appear to glow, even in daylight. Being such a bright colour, it was considered that dayglo would be readily visible and would prevent collision. Training aircraft were particularly suitable for high visibility schemes for collision avoidance where many trainers could be airborne with student pilots in a relatively confined area. Dayglo was designated in the US Federal Standard FS595a vocabulary as FS28913 (semi-gloss) *'Blaze Orange'* or *'Fluorescent Red Orange'*; both FS28913 and FS38913 are the same shade of orange, only in semi gloss and matt respectively, and introduced by the US armed forces during the mid-1950s. UK introduced '*Dockerblaze Orange Red'* as its fluorescent orange (RAF vocabulary 33B-2202312) which, like the US colour, was applied over a white primer. But generally, because of its complexity and expense, dayglo in the RAAF was relatively short-lived – ten to fifteen years for the trainers, and only about five years for the transport fleet. National markings were altered for the addition of dayglo – the first Winjeels treated were of CFS and 34SQN in APR 1961 and the tail flash was moved aft onto the rudder and not marked on the daylo fin (as was the case with BFTS); nose numbers were not marked on the dayglo cowlings until late 1963; and the fuselage roundel reduced from 33" to 24" in 1964.

Fading Dayglo. Depot-level maintenance, i.e. major 1000-hourly 'E' Servicings, say for the RAAF Dakota fleet was done at Parafield by DAP, and then Airframe Repair Workshops. 'E' Servicing would take about six months to complete, and would occur roughly every three years. For the Dakota it was here that dayglo was added during major 'E' Servicings over 1959 through to 1962. However, the main problem with dayglo was that it faded within about two years. Its maintenance involved stripping off the old dayglo and surrounding paintwork, to provide a clean surface and prevent any paint build up – all this before the time-consuming dayglo re-application could begin.

1968 – CFS A85-405 faded dayglo, and Vampire A79-824 has recently been re-done

Fresh and faded dayglo – a lineup behind A85-435 at Point Cook in the mid-1960s, and A85-423's faded tail

Camouflaged FAC Winjeels

Forward Air Control – Background. The timely marking of targets on the ground for attacking aircraft began to a large extent in WWII. Over 1943-44, 3SQN RAAF used a "cab-ranking" system in Italy with their Kittyhawk fighter-bombers holding off until a priority target became designated, and then this position would be relayed from a ground FAC describing local ground features onto the target.[30] Communications in those days was via VHF radio. Meanwhile in New Guinea, Boomerang fighters of 4SQN and 5SQN proved ideal airborne FACs, leading strike aircraft to their targets.[31] In both the Korean and Vietnam Wars, airborne FACs used light aircraft to mark ground targets for the fast-moving attacking aircraft, using now smoke rockets to fire onto the target and provide some small degree of stand-off from hostile fire. These aerial rockets had White Phosphorous – aka "Willie Pete" – smoke to accurately mark the target. In Vietnam, the RAAF provided 36 fighter pilots over a five-year period to serve in USAF FAC units, flying O-1, O-2 an OV-10 aircraft.[32] Aussie FACs controlled strike missions from the USAF, USN, USMC, VNAF and RAAF.[33]

Australian Training. To train fighter pilots for Vietnam, a basic FAC training course was developed at Williamtown, to use the Winjeel as the FAC lead-in trainer. From 1968, four Winjeels (A85--412, -414, -436 and -445) were modified with FM tactical radios for operation at Williamtown, initially by 2(F)OCU. A85-445 (below) conducted ARDU trials in 1969 for the re-roling to a training FAC capability.[34]

A85-445 – one of the first FAC Winjeels – at 2(F)OCU Williamtown in 1968, with the long whip antenna

Radio Fit. The Winjeel was only equipped with VHF radio. To talk with ground troops, an FM radio was added (shown by the whip aerial in front of the cockpit), and to communicate with the attacking fighter aircraft, UHF radio was required (shown below by the large white dorsal antenna). After the first four Wineels modified, A85-407 and -413 followed in 1969. These were upgraded for FAC duties at Williamtown under Winjeel Modification No.99.[35] In early 1970 it had been planned to pass the FAC role to the new 5 Operational Training Unit (5OTU),[36] but this was soon changed to form a dedicated FAC unit – 4 Flight (4FLT) on 1 APR 1970[37] – when A85-438 joined the FAC fleet.[38]

Early FACs A85-412 and A85-445, during OCT 1969 on the Shoalwater Bay detachment when A85-412 crashed

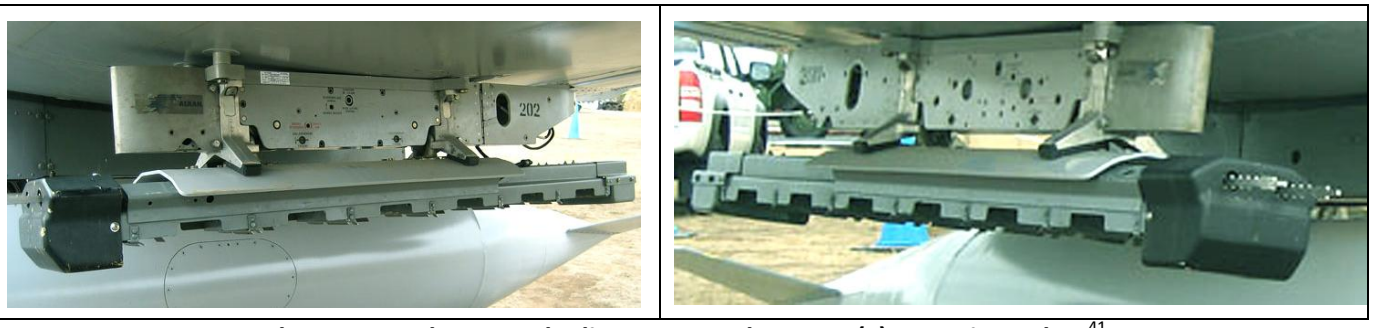
Target Marking. With the early FAC configuration, smoke-grenades were thrown out of the open cockpit to mark the target. After the new radio installation, the next modification was for the smoke-grenades to be dropped externally from a dispenser under the centreline for target marking. Some of the FAC modification work was then carried out by Hawker de Havilland (HDH) at Bankstown under Modification No.100 – this was the case for A85-410 over OCT-NOV 1970, which then went to 4FLT.[39] This Modification might well have been for the centreline dispenser for releasing six M18 (aka Mk.18) smoke-grenades.

A85-410 c1971 (above) FAC-modified with the FM whip aerial and centreline smoke-grenade dispenser; and in 1974 (below), camouflaged and more clearly showing the dorsal UHF aerial – A85-410 is now on display at the Queensland Air Museum, Caloundra

Smoke-Grenades. The M18 smoke-grenade was available in white and four eye-catching colours: yellow, red, violet and green (the last difficult to discern in green foliage!). It had a ring-pull igniter and with a 1.2 – 2.0 second delay (so needed to be ejected out of the cockpit quickly). It weighed 538 grams, and produced the cloud of coloured smoke for 50 – 90 seconds.[40]

M18 smoke-grenades came in a selection of colours to mark targets

Smoke-Grenade Dispenser. The Winjeel used what appears to be the grenade dispenser carried by the FAC PC-9/A(F), however not attached underwing like the PC-9 pylon. The dispenser was attached to two simple carriage points on the Winjeel fuselage centreline, and enabled the single release of up to six smoke-grenades in a similar longitudinal configuration as shown below on the PC-9.



The M18 smoke-grenade dispenser on the PC-9A(F) FAC wing pylon [41]

FAC units. In the 1980s, the Squadrons took over the role from 4FLT within a dedicated FAC 'C' Flight, first 77SQN over 1987-88 (aircraft included A85-409 and A85-458), then from JAN 1989 with the newly re-formed 76SQN. A flow of Winjeels were converted to the FAC role to keep the capability alive, which enabled a final four Winjeel FAC aircraft in 1994 (A85-411, -415, -426 and A85-443).[42] With the withdrawal of the Winjeel, the FAC role passed to the PC-9/A(F) in 1995, which went through a similar series of FAC units as the Winjeel, and now forms 4SQN. **Joint Terminal Attack Controller** (**JTAC**) is the new term adopted from SEP 2003 by the US forces to replace 'FAC'.[43] The JTAC directs the action of combat aircraft engaged in close air support and other offensive air operations from a forward position. In 2006, the RAAF became the first foreign air force to receive US JTAC accreditation, and 4SQN runs ADF JTAC training. With the introduction to the FAC role at Williamtown, the following provides a timeline for the various RAAF FAC units:

- **1968** – first 4 Winjeel FACs to Williamtown with 2(F)OCU;
- **1970** – after initial plans to pass to 5OTU, Winjeel FACs form 4FLT;
- **1987** – 77QN 'C'FLT replace 4FLT;
- **1989** – 76QN re-formed, FAC to 'C'FLT
- **1994** – Winjeel retired from RAAF;
- **1995** – PC-9/A(F) becomes the new FAC training platform with 76SQN 'C'FLT;
- **1997** – FACs to 77SQN 'C'FLT;
- **2002** – in JAN 2002, the FAC Development Unit (FACDU) was formed, and accredited as JTACs;
- **2009** – in JUL 2009 4SQN formed to absorb FACDU and train JTACs;
- **2019** – the PC-21 will follow the PC-9A(F), probably from the end of 2019.

FAC Procedures. This is a short summary of Winjeel FAC procedures with attack aircraft. The attacking formation would have been handed over to the FAC's UHF frequency by air traffic control, or the theatre control and reporting centre, before the rendez-vous (R/V) with the FAC. The FAC would brief target weather, the bearing and distance from R/V to target, target description, run-in heading, nearest 'friendly' forces, known areas of 'bad' guys to avoid, safety height if loss of visual conditions, and the size of the danger area around the target. The FAC would also determine the number

of weapons to be released on each pass (with weapons fuzing and spacing, if applicable). Meanwhile, the FAC would have been doing his one-armed wall-papering impersonation by talking on F/M radio to ground forces and to his home-based tactical air command post to ensure final clearances. Leaving the R/V, aircraft would manoeuvre towards the target area, and the FAC would mark the target with smoke. The attacking aircraft would then position to be cleared in for the attack run, and only after a final FAC "cleared hot" confirmation to "hit my smoke", release weapons. When all weapons were released, the FAC would close into the target and provide a bomb damage assessment (BDA, in later years this became the battle damage assessment). Attacking aircraft would return to home base, the FAC would return to another R/V to coordinate further attacks. Of course FAC methods have moved on from these visual Winjeel days, with laser target marking, data-linking, and other advanced procedures, to provide support for ground forces.

Camouflaged Winjeels. The camouflage adopted by FAC Winjeels was the same as being used at the 'Tactical Fighter Force' at the time, by the Mirage and by the Williamtown Macchis. In 1971, as all Mirages were being upgraded to a common multi-role standard for use by any of the four fighter squadrons and the OCU, a three-tone camouflage scheme was introduced which became known as the 'Standard' scheme.[44] This scheme – *Olive Drab* B381C-298 with *Extra Dark Sea Grey* B381C-640 upper surfaces, and *Light Gull Gray* FS26440 lower surfaces – was applied to the FAC Winjeels, and all four 4FLT aircraft were camouflaged from MAY 1974 for *Exercise Kangaroo 1*.[45] Winjeels remained camouflaged until withdrawn from service in 1994. Squadron tail markings featured on Winjeels with 77 and 76SQNs.

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

1974 – Freshly camouflaged 4FLT Winjeels A85-410, A85-411, A85-415 and A85-426

And Winjeels Beyond…

Fortunately we will still see Winjeels in our skies for many years to come. In 1980, the revised Air Navigation Regulation 108a permitted operation of historical or ex-military aircraft on the Australian Civil Aircraft Register.[46] This policy enabled the addition of several CAC types – including the Wirraway, Mustang and Winjeel.

The following list includes 33 Winjeels allocated civilian VH- registrations, most of which are still airworthy. A further 12 Winjeels are listed as 'gate guards' or in museum displays. In addition, A85-449 was presented to Papua New Guinea to commemorate the training provided by Winjeels to the PNGDF in 1978, but this airframe has since been returned to Amberley for restoration by the RAAF Amberley Aviation Heritage Centre (AAHC).[47]

Restored interior of A85-447

Australian Air Publication **7212.003-1**

Nº

ROYAL AUSTRALIAN AIR FORCE

FLIGHT MANUAL

Winjeel Dual Trainer

ISSUED FOR THE MANAGEMENT AND CONTROL OF THE ROYAL AUSTRALIAN AIR FORCE
BY COMMAND OF THE AIR BOARD.

DEPARTMENT OF AIR

Instructional Airframes

We have been fortunate in that often when the RAAF deemed an airframe as no longer airworthy or operational, it has often been retired to instructional use – this was often to the RAAF School of Technical Training (RSTT) at Wagga, or its predecessors. Such airframes were required initially for technical training at the Engineering School, Ascot Vale Melbourne; then the Ground Training School (GTS, which later became the RAAF Technical College – RTC) at Wagga; and then RTC Det 'A' at Rathmines, merging into No.2 National Service Training Flight at the Officers' Training School.[48]

With the Winjeel, 21 examples were retired from 1957 as Instructional Airframes, the two prototype CA-22s as Instructional A/C No.1 and Instructional A/C No.2 (with both now surviving with service museums). Most were released to instruction in 1977. Indeed, in the tender loving care of maintenance by the apprentices, being training aids often ensured their longevity, some being fully restored to airworthiness on the VH- register after their instructional duties. Others remain on static display or gate guard duties, and several more are stored pending restoration – including hopefully A85-462, the last Winjeel, for future airworthiness.

Winjeels A85-618 and A85-364 as Instructional Airframes at Wagga in 1967

I/A Number	RAAF Serial	Details
1	A85-618	JUL 1957 RSTT, stored RAAF Museum Point Cook
2	A85-364	JUL 1957 RSTT, on display FAA Museum HMAS Albatross
3	A85-456	DEC 1969 RSTT, storage at RAAF Museum Point Cook
4	A85-424	MAY 1973 Point Cook for fire fighter training
5	A85-406	SEP 1975 RSTT, display at MAAF Oakey; Avn Heritage Centre Amberley
6	A85-462	AUG 1975 display at Cadets Mess Point Cook, under restoration
7	A85-432	AUG 1977 Point Cook, to MAAF Oakey for display
8	A85-460	AUG 1977 Point Cook Cadets Mess, to VH-HWI MAR 1989
9	A85-440	AUG 1977 Tasmanian ATC, to VH-HFM JUN 1985
10	A85-461	AUG 1977 Point Cook, to VH-WIU JUL 1982
11	A85-401	AUG 1976 to RAAF Museum VH-NTY, now static display
12	A85-403	OCT 1977 RSTT, gate guard RAAF Wagga
13	A85-407	AUG 1977 RSTT, to VH-NTJ SEP 1989
14	A85-413	AUG 1977 RSTT, to VH-WMD AUG 1998
15	A85-423	AUG 1977 RSTT, to VH-WMK AUG 1998
16	A85-431	DEC 1977 RSTT
17	A85-439	DEC 1977 RSTT, to VH-FTS NOV 1994
18	A85-452	DEC 1977 RSTT, to VH-TOB AUG 1998
n.k.	A85-420	DEC 1977 RSTT, to VH-WMF AUG 1998
n.k.	A85-428	JAN 1978 RSTT, to display at Fighterworld Williamtown
n.k.	A85-451	JAN 1979 RSTT, to VH-WMN AUG 1998

For the last three aircraft, their E/E.88 Aircraft Status Cards do not record I/A numbers, but were possibly I/A 19 to 21.
Source: E/E.88 A85 Aircraft Status Cards [49]

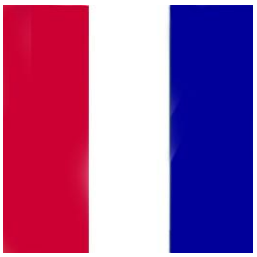
RAAF WINJEEL TRAINERS 1955-1961

The leaping kangaroo fuselage roundel replaced the 'Type-D' roundel on RAAF aircraft from JUL 1956 [50]

Aluminium K3/162, Trainer Yellow K3/185 bands, National Markings *Glossy Red K3/346* and *K3/343 Glossy Blue*

36" Type-D Wing Roundel

33" Kangaroo Fuselage Roundel 1956



Fin Flash
24" wide x 24" high

Training bands wings and fuselage 12" (30.48 cm) Fuselage roundel diameter: 33" (83.82 cm)
Fin flash: 24" wide (8" each colour) x 24" high

A85-401 for acceptance testing at ARDU Laverton, 1955

1BFTS POINT COOK WINJEEL TRAINERS 1961-1975

The 'dayglo' fluorescent training scheme was introduced to the Winjeel from 1961 [51]

Aluminium K3/162, Dayglo Orange FS38913

33" Kangaroo Roundel 1956 then reduced to 24" from 1964

15" wide x 24" high

Dayglo FS38913

Fuselage roundel diameter: 24" (83.82cm) – reduced from the earlier 33" roundel

Rudder flash: 24" high x 15" wide (5" each colour) **Large nose numbers 24" high x 15" wide (3" stroke)**

1BFTS Winjeel line-up in the mid-1960s

'Dayglo' was introduced to the RAAF from 1959 to aid in a collision avoidance, initially applied to C-130A, C-47, Metropolitan and Bristol 170 transports. It was also a logical decision for use on training Winjeels and Vampires for collision avoidance. The application to Winjeels initially varied slightly, with different positioning of the 'last two' large nose numbers, and the fin flash on the fin or rudder.

CFS EAST SALE DAYGLO VARIATIONS 1960s

A85-427 CFS East Sale 1961 – large 33” roundel, 18”x15” flash on the rudder, nose number not on dayglo cowl
This style of markings was maintained until at least late 1963

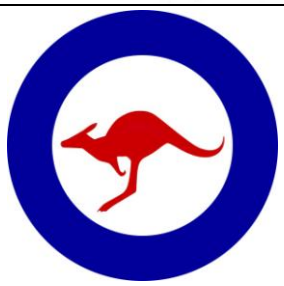
A85-428 in MAY 1961 – ‘daygloed’ the previous month, the large nose numbers behind the dayglo cowl and the same font/size as CFS Vampires (24”x12”), serial number (like A85-427 above) is stencilled, tail flash on rudder

A85-426 in 1964 with smaller 24” roundel, nose number now on dayglo cowl, stencilled serial number
A85-414 behind also now has the new standard 24” roundel, standard font serial number, CAC rudder logos vary

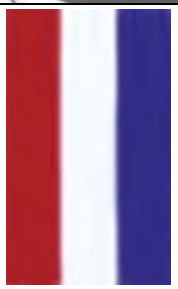
A85-428 CFS line-up 1965-66 with standardised dayglo nose markings, smaller roundels, flash still on rudder

34SQN FAIRBAIRN WINJEEL TRAINERS 1961-1964

A85-438 was one of the first Winjeels to receive dayglo in APR-MAY 1961[52], with 34SQN badge and streamline



Large 33” Kangaroo Fuselage Roundel



Tall Rudder Flash 24” high x 15” wide

34QN badge

A85-404 [53] was the other Winjeel in 34SQN markings, painted just after A85-438 in MAY 1961

These early dayglo Winjeels did not have ‘last twos’ on the nose, and had tail flash moved aft onto the rudder. 34SQN maintained two Winjeels over 1961-64 for pilot checks, and for currency flying of pilots at Russell Offices.

‘FANTA CAN’ WINJEEL A85-443 1975

In the mid 1970s, Winjeel A85-443 (presumably of CFS) was painted with a trial ‘Fanta can’ scheme in place of the standard aluminium and dayglo. The aim of this trial is unclear, as Winjeels were about to be replaced by CT4s.

A85-443 became a FAC aircraft, and was later camouflaged when serving with the Williamtown units until 1994

Fuselage roundel diameter: 24” (83.82cm) – reduced from the earlier 33” roundel
Rudder flash: 15” wide (5” each colour) x 24” high Large nose numbers 20” high, 15” wide, 3” stroke

VH-NTJ (ex A85-407) painted as “A85-443”

CAMOUFLAGED WINJEEL FAC TRAINERS – 77SQN 1987-1988

A85-458 77SQN 'C' Flight 1987 with M18 smoke-grenade dipenser for target marking

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

Olive Drab BS381C-298

Extra Dark Sea Grey BS381C-640

Light Gull Gray FS26440

18" Kangaroo Roundels ***18° Slanting Flash***

Fin flash: 9" wide x 12" high

A85-409 1988

77SQN "Grumpy Monkey"

Image of A85-458 77SQN 1987 *[from 'The DMP Collection']*

CAMOUFLAGED WINJEEL FAC TRAINERS – 76SQN 1989-1994

On 1 JAN 1989, 76SQN reformed at Williamtown as a training unit equipped with Macchis and Winjeel FACs.

A85-444 76SQN 'C' Flight with the early red 76SQN tail marking c1990

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

76SQN FAC mkg below cockpit

76SQN toned-down tail flash

A85-411 Miss Adventure A85-426 Miss Behaviour

76SQN Nose Art 1989

Fin flash: 9" wide (3" each colour) x 12" high at 18° slant Serial number and nose numbers: 8" high, 5" wide

76SQN tail flash: 36" circle on 27" band

A85-443 with the toned-down 76SQN tail introduced c1991-92 until withdrawal in 1994

A85-411 VH-NON as "Miss Adventure"

VH-NON showing its retro "Miss Adventure", UHF blade and dispener attachments *[Glenn Alderton's 2003 image]*

VH-NON's nose art is not really genuine RAAF – just added because it looks nice

CIVIL REGISTER – WINJEELS WITH VH- REGISTRATIONS

A85-402 VH-BFX Elanora QLD

A85-404 was ZK-WJL in NZ, from 2017 VH-NSJ in SA

A85-407 VH-NTJ painted as "A85-443" Duncraig WA

A85-411 VH-NON, FAC scheme Luskinytre NSW

A85-413 VH-WMD was flyer Malua Bay NSW, restoring

A85-415 VH-BUM believed a flyer Albury

A85-420 VH-WMF Melbourne

A85-421 VH-EDX under restoration Melbourne

CIVIL REGISTER – WINJEELS WITH VH- REGISTRATIONS

A85-422 VH-SOB syndicate owned at Caboolture 2016

A85-423 VH-WMK Tyabb 2014

A85-426 VH-DKK believed flying, FAC scheme NSW

A85-427 VH-WJE Richmond NSW

A85-429 VH-OPJ 34 SQN markings Evans Head NSW [54]

A85-430 VH-XXV exSA Avn Museum now IngleFarm SA

A85-434 VH-EDA Melbourne

A85-435 VH-EAD HARS Albion Park NSW 2008

CIVIL REGISTER – WINJEELS WITH VH- REGISTRATIONS

A85-436 VH-WIJ in May 2018

A85-438 VH-IOX Joyner QLD 2005

A85-439 VH-FTS RAAF Museum Historic Flight PCK

A85-440 VH-HFM Echuca VIC 2012

A85-442 VH-NTN FAC scheme Lynton SA 2013

A85-443 VH-CZE marked as "A85-404" Benalla V 2010

A85-444 was VH-AGR FAC scheme Latrobe Valley VIC

A85-445 as VH-JJG 1993, to Ranfurly NZ 1994 ZK-JJG

A85-447 VH-VVH Romsey VIC under restoration 2013

A85-450 VH-HOY Ballarat VIC 2015

A85-451 VH-WMN under restoration York WA

A85-453 VH-XXE Mareeba QLD 2007

A85-452 photographed at Wagga. Registered VH-TOB to Bob Eastgate in Melbourne in 1989, this was renewed on the civil register in AUG 1998. Its registration follows the series of '_OB' identities: starting with Bob's Mustang VH-BOB (A68-104), and a previous Winjeel VH-SOB (A85-422).[55]

A85-455 VH-XXD Toowoomba QLD 2010

A85-457 VH-HFE Melbourne

A85-460 VH-HWI RAAF Museum Historic Flight PCK

A85-461 VH-WIU FAC scheme Legana TAS

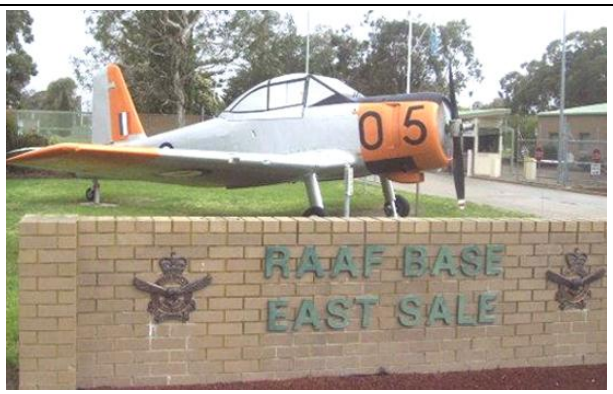
Forlorn Winjeels (A85-448, A85-447, A85-417, A85-450, A85-421, A85-434) at Moorabbin 1973 – 4 would fly again

WINJEELS IN MUSEUMS

A85-364 at FAA Museum HMAS *Albatross* in 2010

A85-618 is stored at RAAF Museum Point Cook

A85-401 flew as VH-NTY to 1995, now at RAAF Museum



A85-405 gate guard at RAAF East Sale in 2009, was joined by Macchi A7-081 in MAY 2018

A85-403 gate guard at RAAF Wagga 2016

WINJEELS IN MUSEUMS

A85-406 now restored at AMB Avn Heritage Centre 2018

A85-410 QLD Air Museum, Caloundra 2008

A85-418 at Moorabin Air Museum VIC 2010

A85-428 at Fighterworld Williamtown NSW

A85-432 Museum of Army Avn & Flying, Oakey QLD

A85-449 restoration AMB Avn Heritage Centre

A85-456 I/A.3 Wagga 2006, stored at RAAF Museum PCK

A85-462 ex Cadets Mess PCK, restore Rupunyup VIC

A85-405 refurbished and positioned at RAAF East Sale main gate – in company with Macchi A7-08

No 3 SQUADRON A.F.C.

by John Bennett

PART I – AMATEURS AT A NEW ART

The whole value of the RFC lies in its cooperation with the other arms and in the assistance it can give to the conduct of operations on the ground. Fighting in the air is not an end in itself, but under present conditions it is necessary to enable this assistance to be given.

Policy in the Air [56]

For centuries man had dreamt of flying. It was on 17 December 1903 that Wilbur and Orville Wright first flew a powered, heavier-than-air machine. At that stage, Orville Wright recalled: "…we were not thinking of any practical uses at all".[57] Perhaps this is not surprising, as previously flight had been considered beyond the reach of man. However, by 1905, the Wright brothers were thinking of military uses for the aeroplane, such as reconnaissance from the air which might prevent surprise attacks by an enemy. Furthermore, they considered that it would be possible to drop bombs on enemy territory.[58] Their ideas were ignored by the US War Department until 1908, when they were awarded a Government contract to supply an aircraft and the training of pilots.

During 1908, the German Army had realised that due to the recent rapid advances made with heavier-than-air flight, the aeroplane would soon be regarded as an "ordnance and reconnaissance tool".[59] Already in Europe, the development of air power was being predicted by theorists such as the Italian Major Giulio Douhet, who in 1909 had foreseen: "It must seem strange that the sky, too, is about to become another battlefield no less important than the battlefields on land and sea."[60] However, even after the first training course for German pilots in 1911, the General Staff expressed doubts as to what purpose a military aeroplane unit might serve. The following year, the German Army decided to replace the smaller airship fleet, originally intended for aerial reconnaissance and cooperation with troops in the field, with aeroplanes.

In Britain, military aviation was inspired by Louis Blériot's flight across the Channel in July 1909. The demonstration of a Bristol Boxkite machine at army manoeuvres during 1910 showed the value of aircraft as reconnaissance vehicles. However, the Committee of Imperial Defence advised "…that the experiments with aeroplanes…should be discontinued, but that advantage should be taken of private enterprise in this branch of aeronautics."[61] The Chief of the Imperial General Staff, Sir W G Nicholson, even pronounced: "Aviation is a useless and expensive fad advocated by a few individuals whose ideas are unworthy of attention".[62]

Despite this hindrance, in February 1911, an Army Order was issued to create the Air Battalion of the Royal Engineers. The unit was established with seven aircraft, and this was to form the nucleus of the Royal Flying Corps (RFC) in 1912.[63] Several squadrons were formed, and over the next two years the RFC developed its aircraft for likely war roles, primarily aerial reconnaissance: "The single use in war for which the machines of the Military Wing of the Royal Flying Corps were designed and the men trained was (let it be repeated) reconnaissance."[64]

In Australia, too, attention was being given to military aviation. In September 1909, the Commonwealth Government offered a £5,000 prize for the successful design of a "flying machine…for military purposes".[65] During 1910, plans for an air arm were submitted to the Department of Defence, and the following year the Defence Minister, Senator G F Pearce, was able to gazette the requirement for personnel to create a service flying school. The formation of a Flying Corps was approved in October 1912.[66] Training aircraft were delivered from England in 1913 for the Central Flying School at Point Cook, Victoria, which commenced its first instructional course in August 1914. That month, the Great

War had started in Europe, and by the middle of the following year Australians were flying on operations. As F M Cutlack, the official war historian of the Australian Flying Corps in the First War, wrote:

> At the beginning of the war the existing aeroplanes on either side were but elementary machines. They carried no armament, and were regarded chiefly as auxiliaries to cavalry for purposes of reconnaissance. They were still largely at the mercy of any unfavourable breeze. Their flying speed was not great; their climbing speed, judged by the performances of 1918 types, was ludicrous. At that date there was no sign of any appreciation of distinct and limited duties for this or that type of machine.[67]

Indeed, at the beginning of the war, no aircraft carried machine guns, as the role for the flying machine in these opening days of aerial warfare was observation. From the mud-filled trenches little information could be gleaned about enemy positions – it was the aeroplane that represented a speedy and accurate method to provide such information. On 31 August 1914, the RFC conducted the first aerial reconnaissance during the retreat from Mons and was able to report that the enemy drive towards Paris had been halted and that its direction had been changed towards the Channel ports. This was tremendous proof of the value of aerial reconnaissance and marked a turning point in the conduct of warfare.

On the other side of the lines, the Germans also used this new aerial weapon on observation patrols. The reports of the pilots and observers were so accurate after the first week of war that reconnaissance by aeroplane became the fundamental source of information on the behaviour of the enemy.[68] Before the war, German exercises in army cooperation had met with little success, mainly due to the lack of a suitable means of communicating with the ground. The British had soon solved this problem. Pilot Geoffrey de Havilland, at Farnborough's Army Aircraft Factory, had flown a B.E.2 two-seater aircraft with a newly designed wireless set installed in March 1912.[69] Numerous tests followed, and with the impetus of war, by September 1914, wireless equipment was being fitted to aircraft to aid artillery spotting. This was soon to become a major role of the RFC, with the artillery fire being spotted by the reconnaissance aircraft, and its correction passed by wireless to the gun batteries.

With the change to static trench warfare in late 1914, the German aviation units were now required to carry out accurate short range reconnaissance over the Allied trenches, to cooperate with the infantry, and increasingly to act as observers for the artillery.[70] Other assignments soon to be taken on by the German Army Air Service included long range reconnaissance flights to ascertain the strength of troop concentrations behind the enemy front, bomb dropping against important installations, and air fighting between aircraft. The Germans, like the British, saw the airman as the "maid of all work".[71] During the spring of 1915, the Germans realised that the British air-artillery cooperation during the battle at Neuve Chapelle, near Armentières, and the photos taken before the fighting, had proved invaluable to the land battle. This was the proof of the aeroplane's worth, and it soon became apparent that reconnaissance aircraft from the other side represented a threat that needed to be destroyed.

To shoot down other aircraft, designers came up with several options for armed single-seater "scouts", as fighter aircraft were first known. The scouts were developed to fly offensive patrols against enemy reconnaissance aircraft and to provide defensive patrols escorting friendly reconnaissance and bomber aircraft. The problem was in developing a forward-firing machine gun which would not shoot off the propeller. This could be done two ways: with a pusher type scout, with the engine behind the pilot and no propeller in front to hinder the field of fire, or with a more conventional tractor aeroplane being able to fire forward safely through the propeller arc. The Germans achieved this with interrupter gear, and the Fokker "*Eindekker*" monoplane with its forward-firing machine gun gave the Germans air superiority from the summer of 1915 – a period known as the "Fokker Scourge". Small numbers of these scouts were attached to two-seater reconnaissance units for protection purposes.

The Fokker Scourge meant that when reconnaissance aircraft crossed the lines, an escort of armed scouts was required to protect them. This German dominance lasted until the spring of 1916, when British F.E.2 and D.H.2

pusher scouts, with better performance than the Fokker and a forward firing machine-gun, wrested back control of the air. Air superiority was maintained by the Allies for the opening of the Somme offensive in late June 1916. During this offensive, the RFC developed the "contact" patrol. This direct support for the army involved keeping in contact with the leading troops of an advance, and reporting the situation back to the appropriate land headquarters. By September, after the Germans introduced their fast new Albatros scout, the RFC's air supremacy was again challenged. Not only did the Germans again hold the upper hand with superior machines, their defensive policy had led to the grouping of one or two single-seat scouts, taken from each two-seater *Staffel,* and formed into separate fighting units. This development now resulted in dedicated specialist hunter or "fighter" units – the *Jagdstaffeln*, or *Jastas*. The mission of the *Jasta,* which was smaller in size than an RFC squadron*,* was aerial fighting: hunting out the RFC fighters and destroying them to allow the army cooperation aircraft to proceed with their work. Equally important was the destruction of British two-seaters; those engaged on artillery observation and reconnaissance were particularly seen as a threat.[72]

By the end of 1916, the Allies had developed their own machine gun synchronising mechanism and began to abandon the pusher designs in favour of the Sopwith Pup and SPAD scouts. After the failure of the costly attacks at the first battle of the Somme in November, the British launched a spring offensive in 1917. During March 1917, the German Army withdrew behind the "Hindenburg Line" leaving the devastated no man's land to the advancing British. The British assaulted Vimy Ridge in the Battle of Arras, which began on Easter Morning, 9 April. This again was a time of German aerial supremacy, due to their superior aircraft, which resulted in a disaster for the RFC with "Bloody April". The loss rate for the month was 5 to 1: there were 37 *Jastas* available to the German Air Service, mostly equipped with Albatros D.IIs or the newer and faster D.IIIs, and the month would cost the RFC no less than 316 aircrew.[73] In the face of this total German air supremacy, the life expectancy of RFC aviators over the lines at this stage was not long. As a result of these losses, pilots were rushed to the front with only 17 hours' total flying experience.[74]

In the summer of 1917, the Germans changed their fighter tactics by introducing large formations of scout aeroplanes, the grouping of four *Jastas* into a *Jagdgeschwader*. The first *Jagdgeschwader* - JG1 - was led by Captain Manfred von Richthofen and based around Courtrai. By these large-scale air superiority operations, the Germans held mastery of the air over the summer. JG1, moved from sector to sector along the front as the situation dictated: as the centre of interest shifted from Arras to the north where the great Flanders offensive had opened, the *Jagdgeschwader* would follow. Housed in tents, these brightly coloured aircraft were flamboyantly painted for personal identification and soon became known as Richthofen's Circus.

For the first time in July 1917, Allied scouts operated as fighter-bombers, carrying light 20-pound Cooper bombs to drop on targets of opportunity. In the Battle of Ypres from the end of July, much use was made of scouts in the ground attack role, coordinated with the infantry advance. Here the D.H.5 scout proved suitable, and later in the year during Battle of Cambrai, the AFC-flown scouts of 68 (Australian) Squadron were instrumental. It was here in the Battle of Bourlon Wood that tanks and aircraft cooperated for the first time in a massed attack, with D.H.5s carrying out ground attack sorties.[75] These surprise tactics in air-army cooperation, using new major weapons of attack, made this one of the most remarkable operations of the war.

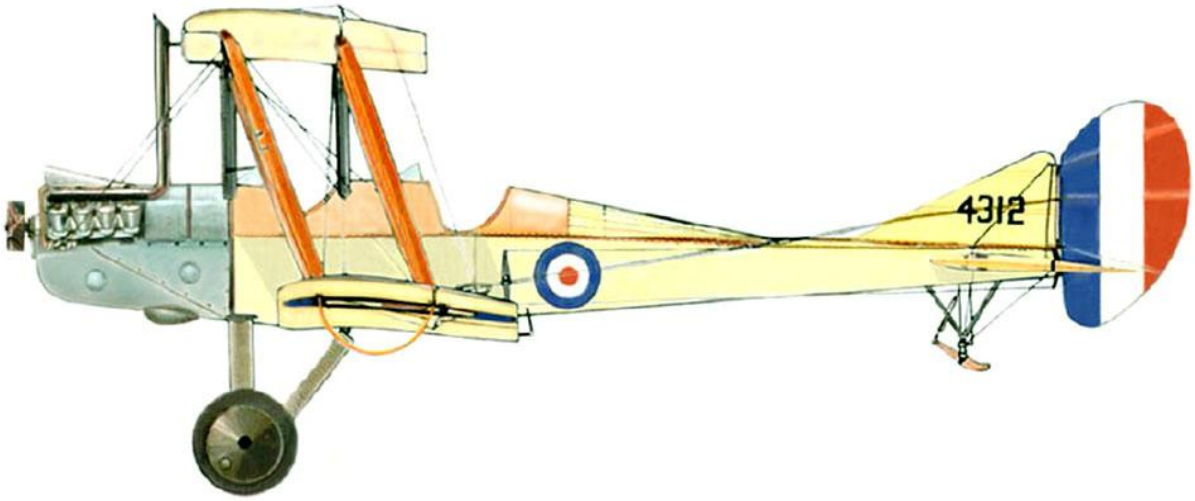
Over this period of development in single-seat scout aeroplanes, two-seat observation aircraft were also armed for their own self defence. Early in 1915, the first attempts had been made by the Germans to arm the two-seater reconnaissance aircraft with a light machine-gun fitted to the observer's cockpit, which was usually behind the pilot's. This armament provided defence to the rear only and initially the pilot did not have a forward-firing gun. By the summer of 1916, the Germans had equipped their two-seater reconnaissance machines with a fixed gun firing forward for the pilot, and a gun on a pivot on a rotatable ring at the observer's position.[76] The British two-seater went through a similar evolution. The main RFC reconnaissance machine, the B.E.2c, had the pilot in the rear cockpit. The observer in the front was surrounded by struts and wires, with no free arcs of fire. This was not ideal, and was rectified on subsequent two-seaters, with the observer armed with a machine-gun in the rear cockpit. Development also saw the pilot armed with a forward-firing gun, synchronised to fire through the propeller arc, and the observer being better equipped with his gun, or twin guns, also mounted on a rotatable mount.

With well-armed two-seaters, offensive tasks were the next step in air power development. During April 1917, German two-seaters began ground attack against the trenches and troop concentrations with machine-guns and grenades. These dedicated ground support units were known as *Schutzstaffeln* (*Schusta*), or protection flights, and had been formed as a defensive army-cooperation force following the Battle of the Somme. During the summer of 1917, this ground attack role expanded so that more aircraft could better support the ground battle. The *Schusta* were renamed as *Schlachtstaffeln* (*Schlasta*), or offensive battle flights, and their task was one of aggressive low level support against the enemy ground force's decisive point. These close support tactics were to assist the advance of the infantry by support with machine-gun fire, bombs and hand grenades.[77] Allotted to the Armies, Corps and Divisions as circumstances demanded, this expansion of the use of air power considerably strengthened the German Air Service during late 1917.

The fighting aeroplane had come a long way in three years of war, and these developments had not left Australian airmen behind. When the first Australians flew their military aeroplanes operationally in Mesopotamia in 1915 as the First Half Flight, their innovative skills were tested. The most beneficial service these early rudimentary machines could perform was reconnaissance, and this was performed in conditions of wind and heat such as no aeroplane designer had ever imagined. Some early experiments in providing support to the land forces were attempted: multiple machine guns were mounted on the undercarriage of an aircraft to support ground forces, and parachute drops of food and supplies to the British ground force, besieged in Kut-el-amara from December 1915 to April 1916, were made.[78]

The first full squadron of Australia's new Australian Flying Corps (AFC), 1 Squadron AFC, was raised at Point Cook, and joined the Egyptian Expeditionary Force on arrival at Suez in April 1916. Renamed as 67 (Australian) Squadron RFC, the unit trained with the RFC, and after equipping with British aircraft, flew reconnaissance sorties in support of the Army defending the Suez Canal - the vital link in the line of communications for the British Empire.

The raising of another Australian flying unit was then proposed. From 19 September 1916, this second Australian squadron for overseas service began to assemble at Point Cook. The complement of this unit comprised 18 officers and 230 airmen.[79] Most of the pilots had been trained at Point Cook at the Central Flying School on No 5 Course. This unit, known as the 2nd Squadron AFC, as it had been the second squadron formed at Point Cook for overseas service, sailed under the command of Captain Henry Storrer, on the HMT *Ulysses* from Port Melbourne on Wednesday 25 October 1916. With a total of 1770 officers and men of the Australian Imperial Force (AIF) on board, the *Ulysses* called at Durban and Capetown. After a fortnight stop at Sierra Leone, the Australians arrived at Devonport on 28 December. In England, the new squadron now became 69 (Australian) Squadron RFC. However, another new Australian squadron had been formed on 20 September in Egypt out of 67 Squadron (1 Squadron AFC), and this was also known as the 2nd Squadron AFC: this unit became 68 (Australian) Squadron RFC, and ultimately 2 Squadron AFC. Eventually, 69 Squadron would become 3 Squadron AFC.[80]

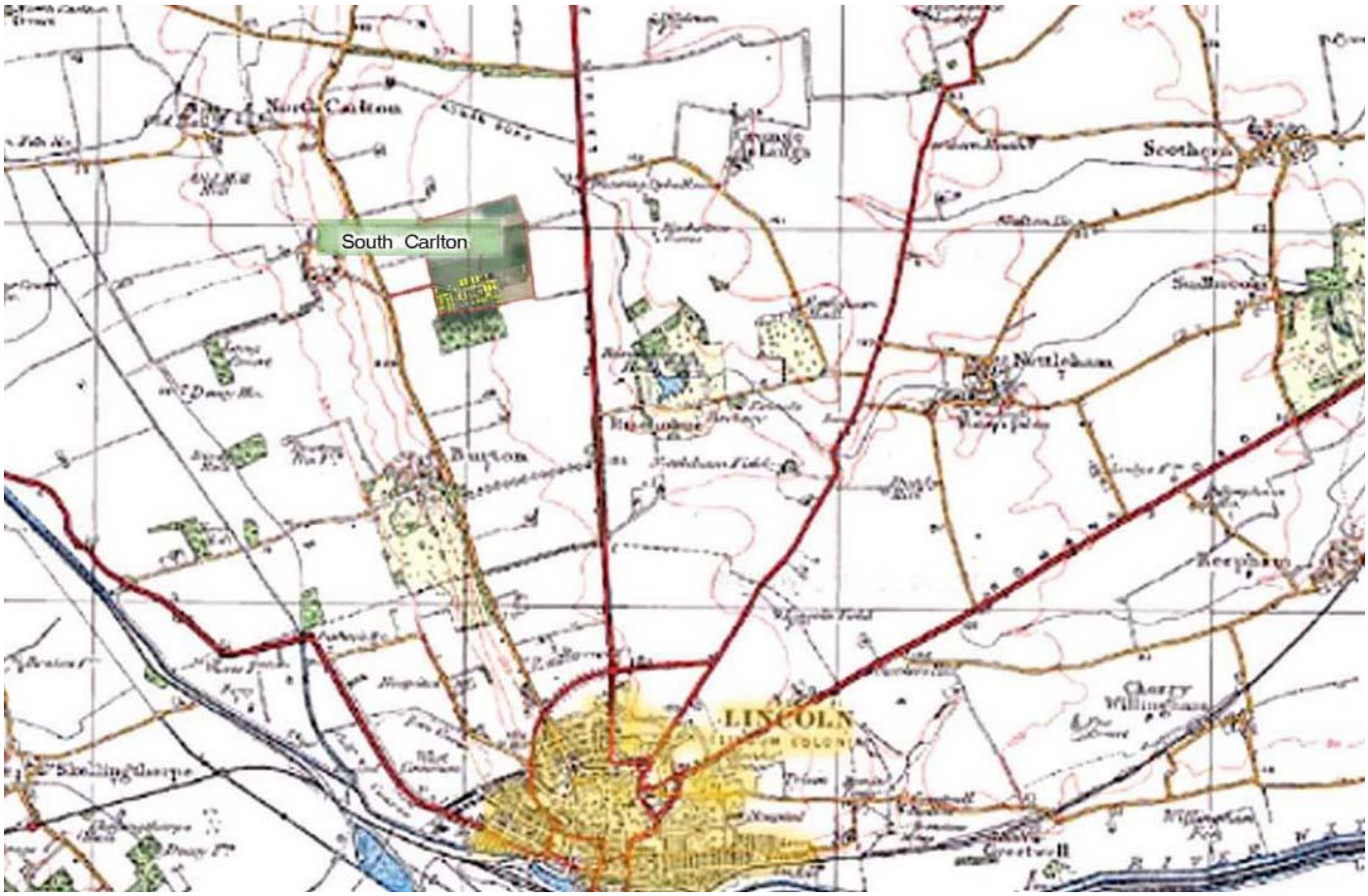


B.E.2c 4312 joined 67 (Australian) Squadron in Egypt in JUN 1916 [81]

The B.E.2c was fitted with a starboard-mounted vertical aerial camera for photographic reconnaissance

No 69 (Australian) Squadron Royal Flying Corps was to be commanded by Captain David Blake. His executives were Captain William Anderson as OC 'A' Flight, Lieutenant Henry Ralfe as OC 'B' Flight, Lieutenant Rolf Brown OC 'C' Flight, Lieutenant R Ross as Equipment Officer, and 2nd Lieutenant Eric Knox as Recording (or Administrative) Officer. The Squadron was to be based at South Carlton, near Lincoln, as part of the 23rd Training Wing. The nucleus of 69 Squadron was established at South Carlton on 16 December when Blake was promoted to Major and the other flight commanders to Captain. They then prepared for the bulk of the personnel, who arrived in England aboard the *Ulysses* at the end of the month. Once on English soil, the contingent from the *Ulysses* took the long train voyage of 14 hours, north to Lincoln.

The base for the Australian squadron was at South Carlton, six kilometres north of Lincoln. With the expansion of the Royal Flying Corps, many training bases were required, and the new aerodrome above the steep Lincoln Cliff and to the east of South Carlton village had only opened in November 1916. The aerodrome was barely half completed when the Australians arrived, with work continuing on accommodation and workshops. When completed, the aerodrome was equipped with seven permanent hangars, of the 1916 RFC pattern, one of which served as an Aeroplane Repair Shed. In addition, there were several temporary canvas Bessonneaux hangars, and living accommodation was provided by rows of wooden huts.[82]



South Carlton aerodrome, 6km north of Lincoln on the B1398, showing the perimeter and domestic buildings

The aerodrome was to be the home of the 23rd Training Wing, RFC. The Wing was formed on 13 November 1916 and comprised a Headquarters, No 45 (Reserve) Squadron and the new Australian squadron at South Carlton, three reserve squadrons at Waddington, and another one at Scampton.[83]

Due to the need for a large infrastructure for the training of pilots since 1915, training or "Reserve" squadrons were started at all existing aerodromes, and at the new stations that sprang up throughout Britain.[84] With two or three squadrons being based at each RFC station, Training Wings were established during 1916, not only to oversee the training in Reserve squadrons, but also to enable first-line, or "service", squadrons to become operational before going overseas.[85]

As the Australians arrived, the huts were still being built, and no aerodrome infrastructure was yet in place. One of the fitters that had just arrived in the muddy conditions of the unfinished camp was Air Mechanic Douglas Sloane, who recorded on 30 December:

> This place is a second Point Cook; because it is four miles from any place where you can get tucker and there are nothing but farms all round… We are in long huts with a stove in the centre & doors each end & plenty of windows. The camp is on a hill with open fields all round & sheep farms are separated with hedges. I may be shifted to any part of England next week; and won't be sorry to move from this camp which is not exactly paradise; because there is a lack of water & too much mud.[86]

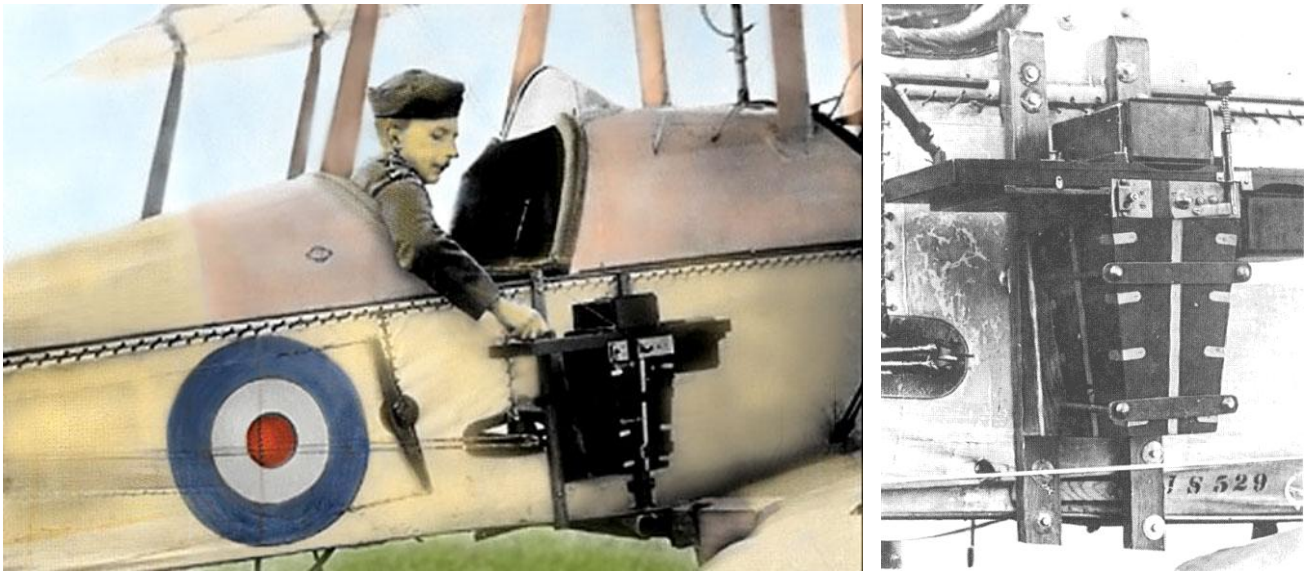
Another founding member of the Squadron was A/M Les Ross, attached to 69 Squadron's wireless section. He recorded on 4 January 1917:

> This is a new camp and it's not too comfortable yet. They are still building it, it will be a big camp soon. It will be a station in the coast defence scheme watching for Zeps. They have been right over the camp a couple of times and once dropped bombs about a mile away. That was about 3 months ago. The camp is situated on a pretty muddy spot about 4 or 5 miles from town (Lincoln). We walk in every now and again and get a meal. Up till today most meals on the camp have consisted of a slice of bread and tea. The country is typically English – hedge fences, old fashioned windmills, haystacks, stone fences, etc.[87]

During the first week of 1917, the Squadron was dispersed to a variety of training establishments throughout Britain to learn the skills required for their fledging Service. As the Squadron by this stage possessed no aeroplanes, and as the 23rd Wing (existing only in a nucleus form) could not provide training, the Australians were despatched to various locations. The pilots were allocated to further flying training, as although the pilots had qualified to wings qualification at CFS Point Cook, they had not graduated as RFC pilots and were required to complete a six-week course at either Reading or Oxford. No 1 School of Military Aeronautics at Reading had formed in December 1915 with the No 2 School forming in April 1916 at Christ Church College, Oxford.[88] The purpose of these schools was to provide technical training to officers awaiting flying training. The students were instructed in the care of engines and rigging, the theory of flight, wireless signalling and receiving, the care of machine-guns, the use of the camera, map reading, and observation of artillery fire with models.[89]

Having completed this theoretical training, the pilots with limited flying experience, mainly the graduates of the Fifth Flying Course at Point Cook, were attached to No 49 (Reserve) Squadron for elementary, or "lower", training at Spittlegate, near Grantham. The basic training machines in the RFC were the Maurice Farman biplanes – the Shorthorn and the Longhorn. Their pilots thought that not only were they named after cows, they flew like them as well.[90] The lower training consisted of about five hours dual instruction and then five hours solo. One 69 Squadron trainee referred to the Maurice Farmans as "old fashioned things that simply can't fall down".[91]

Those pilots who were considered more experienced were sent for advanced, or "higher", instruction – referred by the students as "higher destruction".[92] For the Australians, this training was with No 13 (Reserve) Squadron at Dover and No 20 (Reserve) Squadron at Wye, flying "service" machines such as the B.E.2. Most of these pilots returned to South Carlton in March. Those pilots who had undertaken the advanced flying course returned as qualified pilots; those who had undergone the elementary training were the student pilots. This instructional role, with Avro 504 and B.E.2 training aeroplanes, was the role of 69 Squadron until June, graduating pilots for both the AFC and the RFC.



B.E.2c Corps reconnaissance aircraft of 1916, single pilot operation of a Thornton-Pickard Type C vertical camera

The Squadron had come over from Australia with acting NCOs, all of whom reverted to the rank of 2nd class Air Mechanic on arrival at South Carlton. It was Major Blake's opinion that all should start as equals, with those showing up best during training to receive first consideration for promotion. Forty-three engine mechanics, or fitters, proceeded to the Scottish School of Fitters in Edinburgh for training on aircraft engines. Twenty riggers, who serviced the airframe, were attached to Netheravon for training on rigging military aeroplanes. Four photographers were sent to No 19 Wing at Newcastle on Tyne for instruction, and thirty-four wireless operators were sent to Farnborough for training. One of the fitters despatched to Edinburgh was Douglas Sloane:

All the fitters out of our 69th (Australian) Squadron RFC have now arrived at Edinburgh & are camping in the Free Gardeners Hall, which is a kind of theatre place, only about half a mile from the centre of the city. We are to go to the Scottish School of Fitters, Picardy Place... [93]

The designation of the Australian Squadron, as mentioned by Douglas Sloane, was of interest.

He recorded: "You see we are now attached to the 69th Squadron of the Royal Flying Corps; but we still have (Australian) in front of the RFC".[94]

The terminology as a squadron of the RFC had never been sanctioned by Australian authorities, and after representation, in April 1917, at the request of AIF Headquarters in London, the unit became the 69th Squadron Australian Flying Corps.[95]

One of the wireless operators who was detached to Farnborough was 2nd class Air Mechanic Les Ross, who wrote on 21 January about his training:

The aeroplane directs and sends corrections of the firing to the artillery which we receive and it's a pretty responsible job too. The sending is done by the pilot or observer (usually officers). I would take it on if I got the chance but we don't get the chance. [96]

On return from training at Edinburgh in the middle of February, the fitters returned to Lincoln, not immediately to South Carlton but to spend several weeks gaining additional experience at other local 23rd Wing aerodromes, with 48 (Reserve) Squadron at Waddington and 37 (Reserve) Squadron at Scampton.

While the novice Australian airmen and ground staff had been away to learn their trades, the most experienced pilots had remained at South Carlton as the nucleus of 69 (Australian) Squadron. The first aeroplanes allocated to the Australian unit were 80-hp Gnome powered Avro 504 trainers. However, when the first arrived at South Carlton on 12

January 1917, they were immediately reallocated to 37 (Reserve) Squadron RFC at nearby Scampton. It was not until 30 January that the first machine was received, when Captain Anderson collected a B.E.2e biplane (serialled A1794) from the manufacturers at Vulcan Works in Southport. The end of the month also saw the arrival of the first batch of reinforcements of an officer and twenty other ranks on the HMT *Hororata*.

69 Squadron's first casualty occurred on 13 February 1917, with the death of Acting Sergeant George Hansell, who died of cerebro-spinal meningitis, and was buried at Newport Cemetery in Lincoln. During late February, the mechanics who had been attached away returned to the Squadron at South Carlton. Some were appointed as NCOs and, while the opportunity to fly as aerial gunners was also now available to the groundcrew, resulting in over 100 applicants for the six positions offered for aircrew training.[97]

With the return in March of the first officers sent away for advanced training, 69 Squadron began its role as a training unit for the RFC. Organised into three flights, 69 Squadron was equipped with the Avro 504B and the B.E.2e to train both British pilots for the RFC in addition to AFC pilots for service in France. This status as a Reserve Squadron would continue for the next three months, as 69 Squadron had already been advised of its future employment as a two-seater Corps unit and deployment to France would not be until June 1917 at the earliest.

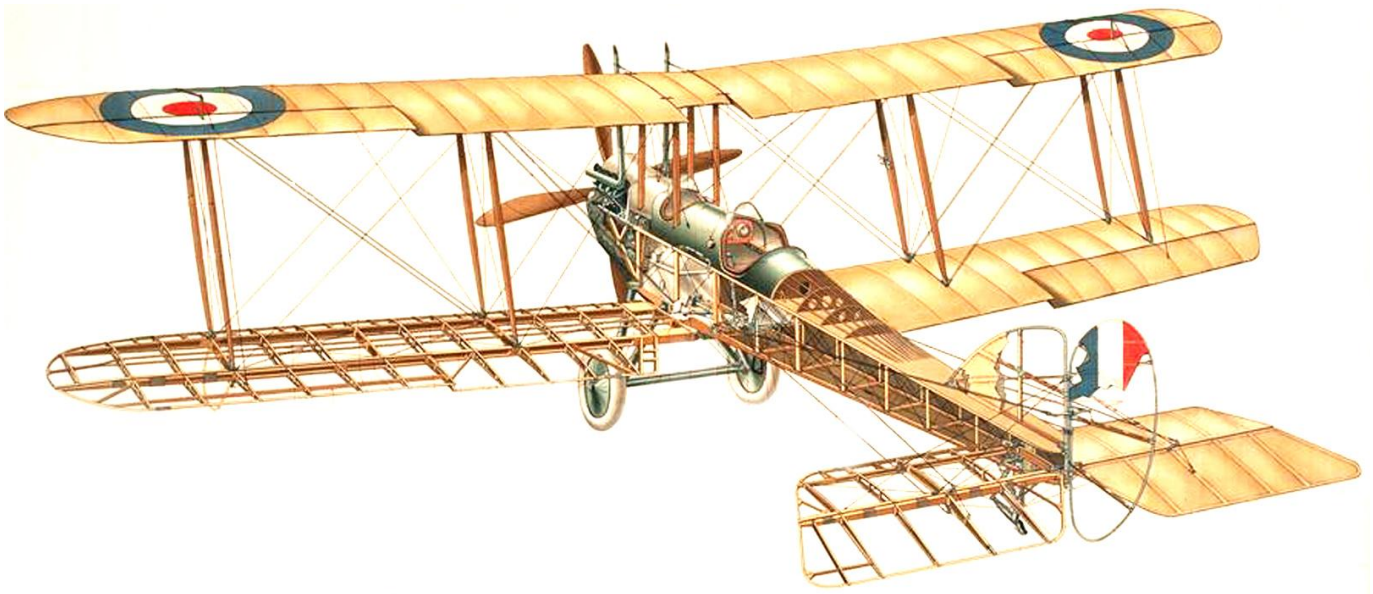
As had occurred when volunteers had been called for observer training, the opportunity for pilot training also captured the imagination of the Squadron's groundcrew. From the volunteers Major Blake selected seven applicants,[98] who then proceeded to No 1 School of Military Aeronautics at Reading.[99] A/M Douglas Sloane recorded in mid-March that there was now "a great deal of flying being done" at South Carlton: "One machine flew into our mess hut and nearly came through the roof when everybody was at lunch…".[100]

The training curriculum current in the RFC at that time, and therefore employed by 69 Squadron as a Corps training unit, comprised:

> Dual Instruction - Having undertaken elementary training of about four to five hours on the Maurice Farman Shorthorn, advanced training was then conducted on the more difficult Avro 504. After some three hours dual instruction, the pupil then flew five hours solo on the Avro.
>
> Service Flying - Graduating from training aircraft, the student was introduced to the operational, or 'service', aircraft he had been assigned to. After a few dual landings, the pupil went solo, and then had to undertake a cross country flight of at least 40 miles, making two landings away from his home aerodrome. He had to climb to 8000' and shut off his engine to make a successful forced landing. In addition, two night landings under the light of flares was necessary. With a grand total of twenty hours solo flying time he qualified as a pilot, providing several other special tests were passed.
>
> Bomb Dropping - fly three times over a Bachelor Mirror, an instrument for judging the accuracy with which bombs could be dropped.
>
> Photography - successful photography of six out of eighteen pinpoint targets had to be achieved from heights between 1500' and 5000'.
>
> Buzzing - send and receive eight words a minute of code on a Morse buzzer.
>
> Artillery Observation - achieve at least one successful shoot on a picture target on the ground and one successful shoot from the air with a puff target, observations being sent down by wireless.
>
> Formation Flying - take part in at least one formation flight.
>
> Fighting Practice - carry out elementary fighting in the air.

Machine Gunnery - achieve proficiency in stripping and assembling Vickers and Lewis machine guns and shooting at a ground range.[101]

The pupil having completed these tests, with his 20 hours' solo flying, then graduated and was permitted to wear his wings. However, the RFC losses of "Bloody April" at the Front during 1917 was about to impact on the training organisation, as more pilots were required in France. It was the stage when "fighting in the air on a battle scale had begun".[102] Consequently, during May 1917, the solo flying experience of the replacement pilot was reduced to 17 hours.[103] That summer (June-August), the student pilots reporting for their elementary instruction on the Maurice Farman Shorthorn found the flying schools overcrowded: at Waddington, for instance, there were 18 pupils per instructor.[104]



[British Army Air Technical Services, drawing No.1675, MAY 1916]

The two-seat B.E.2c was the RFC Corps reconnaissance aircraft in France before being replaced by the R.E.8

The different roles for military aeroplanes that had evolved during the course of the war saw aerial reconnaissance as either tactical or strategic: tactical was confined to the local battle area to determine the day to day changes for the Corps commander, strategic was further afield so that the Army commander might deduce the enemy's plan of the campaign. However, the commander of the RFC, General Sir David Henderson, soon realised that aircraft should extend the range of artillery by carrying bombs beyond the range of the guns.[105] Consequently, a variety of bombing and ground attack roles were assumed by the reconnaissance aeroplane. The principal machine used for Corps, or tactical, reconnaissance work in France during the early months of 1917 was still the venerable two-seat B.E.2e. With the observer sitting in front of the pilot, the B.E.2 possessed poor rearwards defence. It was on this type that the pupils on 69 Squadron flew over March and April, as well as the Avro 504B trainer. A/M Douglas Sloane, whose job as a fitter was to repair the Gnome engines of the Avro 504s on 69 Squadron's 'B' Flight, recorded on 1 April: "Our flight had three machines last night in flying order; but they are all smashed up now & the poor unfortunate riggers will have to work all night on them."[106] With the more advanced R.E.8 and Armstrong Whitworth F.K.8 service aircraft assuming the reconnaissance role on the Western Front, the Australian pilots at South Carlton were subsequently sent to other training squadrons after graduation to gain experience on these more modern service types. It was now anticipated that 69 Squadron would proceed to the front in June with R.E.8 aircraft.

On the evening of 4 April, Cadet Harry Warren was being given dual instruction in the front seat of an Avro 504B (B389), when just after take-off the aircraft spun into the ground on the western edge of the aerodrome. Cadet Warren was killed, while the RFC instructor, although badly shaken, suffered no injury. The subsequent Court of Inquiry found the pupil had got the machine into a spin from which he had insufficient height to recover.[107]

By April 1917, the aerodrome and camp at South Carlton were virtually complete. A new policy was now issued that all Australian pilots should be tested to determine their suitability as single-seat pilots for the AFC's scout

squadrons. Already, No 68 Squadron (later 2 Squadron AFC) was part of the 24th Training Wing at Harlaxton, near Granby, having arrived in England at the end of January.[108] The fourth AFC unit, No 71 Squadron (4 Squadron AFC), had arrived in England at the end of March and was part of the 25th Training Wing at Castle Bromwich, near Birmingham.[109] During May, therefore, all AFC pilots in 69 Squadron were sent from South Carlton to No 81 (Reserve) Squadron at Scampton to test as scout pilots. At this stage too, the Squadron also received some 100-hp Monosoupape powered Avro 504s, or Mono-Avros, the type that scout pilots received their preliminary advanced training, as well as retaining the B.E.2 for tactical, or "Corps", reconnaissance training. This enabled reorganisation on the following lines:

'A' Flight - (Captain William Anderson) "Scout" flight equipped with the 100-hp Mono-Avro 504

'B' Flight - (Captain Douglas Ralfe) dual instruction flight with the 80-hp Gnome Avro 504B

'C' Flight - (Captain Rolf Brown) "Corps" flight with the B.E.2e.

Of the 18 pilots sent to 81 Squadron to test as scout pilots, six were almost immediately returned to 69 Squadron as unsuitable and were then sent to the Wireless and Observers School at Brooklands for training in artillery observation. One of the successful pilots was Lieutenant Allan Brown. He had been posted to 69 Squadron on 7 May 1917, passed the scout evaluation and was then posted to 68 Squadron on 7 June. He was later posted to 67 Squadron in Egypt in November, where he became an ace flying Bristol Fighters in the Middle East.

On 31 May 1917, the RFC Reserve squadrons were retitled 'Training' squadrons, still with their instructional role,[110] while 69 Squadron had been advised that it would proceed overseas on 21 August flying R.E.8 reconnaissance aircraft. Several new types of aircraft were introduced briefly to the Squadron during June, including the Armstrong-Whitworth F.K.3 (known as the "Little Ack" to differentiate from the F.K.8 "Big Ack") and the Curtiss JN-4A Jenny to ease the transition to the heavier R.E.8 service machine. See the list of training machines at the end of this Part.[111]

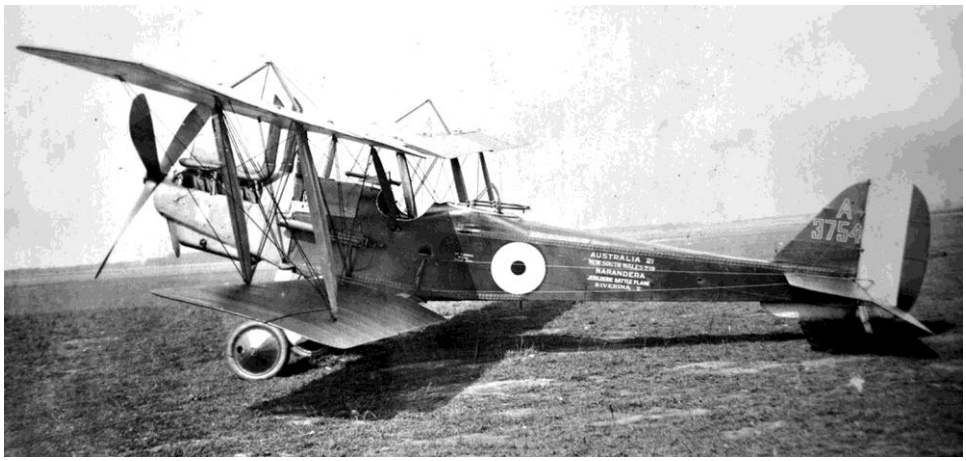
69SQN training aircraft at South Carlton mid-1917 – B.E.2es, and F.K.3s A8101, A8102 and A8099

Meanwhile, instruction also continued with the training aircraft. On 14 June, 2nd Lieutenant L F Gleeson RFC was under dual instruction on an Avro 504B by 2nd Lieutenant C P Lowry. The engine cut out and the machine stalled on a turn. The machine crashed badly and the pupil was severely injured; he died in hospital the following day. Lowry was not injured but was severely shaken. Two days later, on 16 June, 2nd Lieutenant Thomas Bartle was flying solo in a B.E.2e (A1368) when he collided at an altitude of 5000 feet with an Armstrong Whitworth (AW) just over Scampton aerodrome. The AW hit him with his tail skid and pulled out the centresection of Bartle's machine. The wings fell off and the machine crashed, with Bartle being killed. The AW crew was able to land uninjured. The following day, on 17 June, another member of the original Squadron who had come on the *Ulysses,* was killed at South Carlton aerodrome. This was 2nd Lieutenant Harold Kitson, who after graduating from 49 (Reserve) Squadron at Spittlegate was sent to 45 (Training) Squadron for instruction on scouts. He was flying a single-seat Sopwith Pup (B1734) when he spun into the ground. This period was described by one 69 Squadron member, Air Mechanic Fred Walker: "The deaths at our Camp, Carlton, through accidents were appalling."[112] Although the accident rate at this stage is unrecorded, it is known over late 1917-early 1918, the accident rate at the 23rd Wing was one crash to every 30 hours of flying.[113]

Towards the end of June 1917, a number of pilots were sent to 60 (Training) Squadron for training on R.E.8s, and the last days of the month saw the arrival at South Carlton of the first R.E.8s for the Australians. On 20 June 1917, Douglas Sloane recorded: "We have been doing a good deal of flying for the last month past, and are getting a new kind of machine this week, which goes at 110 miles per hour, & is beautifully unsafe to fly."[114] With the arrival of the R.E.8, the training aircraft were transferred to other RFC units during July. Observers arrived from different units in the RFC, and the CO, Flight Commanders and the more experienced pilots carried out their three-weeks "Cook's Tour" on operational squadrons in France.[115] This was so a pilot familiarisation with operations at the Front to assist the arrival in France of 69SQN. In addition, the unit wireless section departed South Carlton on 3 July for further training at Farnborough before proceeding to the front, leaving for France on 30 July.[116]

69 SQUADRON R.E.8s at SOUTH CARLTON 1917

A3654 was issued to 69SQN at South Carlton, but was left at Lympne, Kent, in SEP 1917 for another squadron



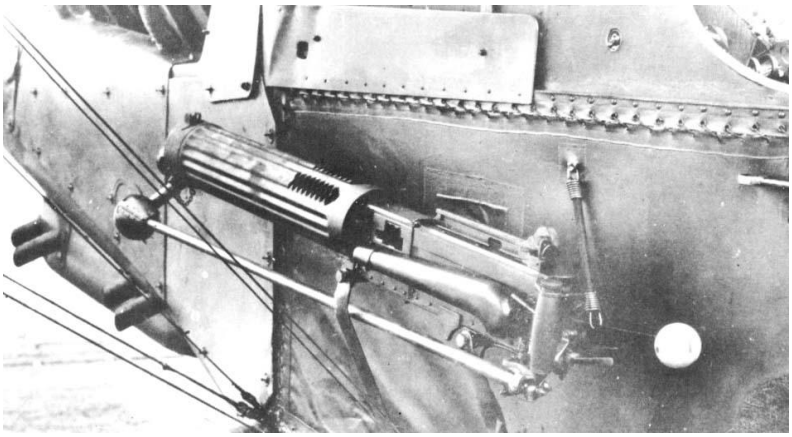
A3754 presentation[117] – "AUSTRALIA 21, NEW SOUTH WALES No19, NARRANDERA, JERILDERIE BATTLEPLANE, RIVERINA 2" – is believed to have the initial numerical 69SQN code "5" on reaching France indicating 'A' Flight

A3754 crashed on landing at Savy in SEP 1917, and was struck off charge by 2 Aircraft Depot (2AD)

The Reconnaissance Experimental number 8, or R.E.8, had been designed by the Royal Aircraft Factory to meet specifications put forward by RFC Headquarters in the autumn of 1915, for a standard corps reconnaissance and artillery aeroplane to replace the obsolete B.E.2. It was a requirement that the new machine should be able to defend itself while performing tactical reconnaissance and artillery-spotting duties. To achieve this, the pilot's and observer's cockpits were very close together for the highest possible degree of crew coordination: the pilot normally undertook the major part of the artillery spotting while the observer's duty was to scan the sky and watch for enemy scouts.[118] The pilot sat in the front, with the observer behind; this was the reverse of B.E.2 reconnaissance aircraft. With the observer sitting in the rear cockpit, he had a wide field of fire to the side and behind the R.E.8 – as required for self defence. In January 1916, the RFC had reorganised its fighting units into Brigades, each comprising an "Army" Wing and a "Corps" Wing to undertake strategic and tactical roles,[119] and the R.E.8 now was the standard Corps reconnaissance machine.

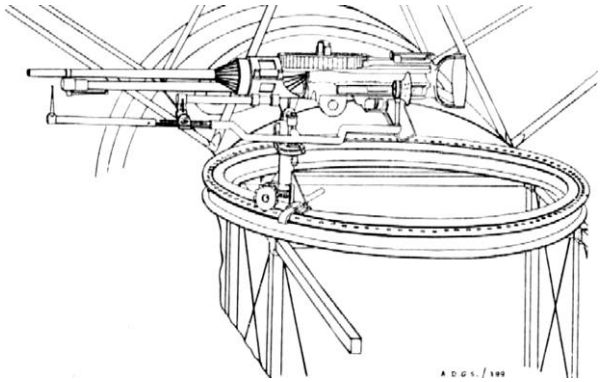
The standard armament of the R.E.8 consisted of a Vickers machine-gun firing forwards through the propeller arc and a Lewis gun, or pair of Lewis guns, on a Scarff rotatable observer's mounting. The R.E.8 was the first two-seater produced by the Royal Aircraft Factory to have both these armaments. The Vickers had a rate of fire of 1,000 rounds per minute, fed by a belt of ammunition with disintegrating metal links; the Lewis had been adapted for aerial use and improved to fire at 600 rounds per minute with a magazine capacity of 97 rounds.[120] Disintegrating links had been developed to overcome the problem of disposing of the spent canvas ammunition belts, which could cause jamming. The disintegrating belts were only held together by the cartridges, so that as each cartridge was withdrawn from the belt, the preceding link had nothing else to hold it to the belt, so simply fell off.[121]

R.E.8 ARMAMENT 1917

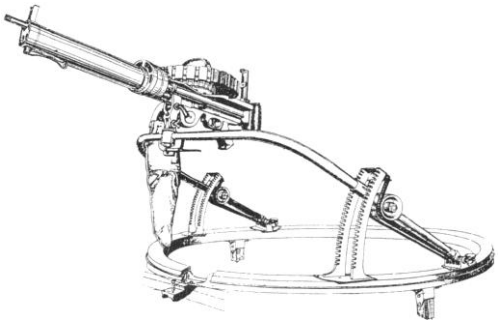


The forward-firing 0.303" Vickers machine gun used a hydraulically operated Constantinesco interrupter gear [122]

The Aldis (here on an S.E.5a) was a telescopic sight, shown also with a fixed ring-and-bead sight



The Scarff ring for the 0.303"rear-mounted Lewis with compensating sight



The Scarff mount enable full traverse for the observer's field of fire on a swivel, and also to provide elevation or depression

As an option, the R.E.8 could be fitted with an Aldis tube in addition to the fixed ring sight, with the diameter of the tube sight subtending 40 feet (a typical wingspan) at 200 yards range. This meant that if the target's wingspan filled the diameter of the sight, the aircraft was at an ideal firing range. Furthermore, by putting the enemy aircraft on the tube's circumference flying towards the centre provided the required "lead", or deflection, to hit target.[123]

The observer's Lewis gun used a Norman compensating wind vane sight, consisting of an arrangement of small horizontal and vertical vanes mounted on a swivel which permitted tilting and lateral movement. The vanes were designed to compensate for the alignment between the aircraft's flightpath and the angle that the gun was pointing.[124]

The observer needed then to "lead" his target so that the time of flight of his fire coincided with the actual flightpath of the enemy aeroplane. Working in three dimensions, the amount of "lead" depended on target range, its speed and its manoeuvring – a tricky problem to solve.

An unusual aspect of the R.E.8 was its ungainly high nose attitude on the ground, which was an outcome of a deliberate attempt to shorten the aircraft's landing run to enable it to use small aerodromes. The R.E.8 was not initially liked by pilots as it was not easy to land, with the large angle of incidence (the angle between the aircraft longitudinal axis and the flightpath), in effect, making the wings act as air brakes as the machine stalled and touched down. Furthermore, in a bad landing, the R.E.8 could be tipped on its nose, pushing the engine back into the petrol tank, with fire almost a certainty.[125] Its unpopularity also stemmed from its slow manoeuvrability, being built as a stable platform for its reconnaissance role. In one engagement in April 1917, the German ace Baron von Richthofen and five of his comrades from *Jasta 11* destroyed six new 59 Squadron R.E.8s in as many minutes.[126] However, the R.E.8's crews became accustomed to its faults, and it did offer an endurance of 4¼ hours and a service ceiling of 13,500 feet, proving a reliable and effective Corps reconnaissance aeroplane. Large orders were placed, but production was held up owing to shortages of raw material, and the first R.E.8 squadron did not arrive in France until November 1916.

To qualify as a reconnaissance pilot, it was necessary for each officer to undergo training in artillery observation. Brigadier General Brancker, then RFC Director of Air Organisation, explained in January 1917 how this method of instruction, of a cockpit suspended from the ceiling, probably was the first flight simulator:

> Every station in England now has an accurate model of a stretch of country laid out on the ground on which is shown trenches, gun-positions, woods, rivers, railways, roads, and villages. This model is studded with small and invisible electric lamps, which can be switched on at will by the instructor. Above the model is suspended a fuselage in which the student is seated, armed with his map of the country below him, his notebook, and a wireless transmitter. He is told before he gets up, on to which point of the map he is to range a certain battery, and then through the fuselage he goes through the whole process of observing the fire, the instructor switching on the little electric bulbs to represent the fall of each shell. The observation of the pilot can, of course, be checked afterwards by comparing his messages with the actual position of these bulbs with regard to the target, and the accuracy of his sending by wireless can be checked as the exercise goes on.[127]

In addition to completing the Artillery Observation Course at Brooklands, the pilots were required to have five hours' flying time on the R.E.8 before proceeding to France. The observers, who had been selected from different units of the AIF, were posted to the Squadron as the training unit was transformed into a service squadron. Like pilot training, observer training too was becoming better organised, and in September 1916 the Wireless School at Brooklands had become the Wireless and Observers School to instruct wireless, artillery cooperation, machine-gun training, photography and map reading. The new observers for 69 Squadron had first completed their three-weeks' training at Brooklands, and had then undergone a three-week course at the School of Aerial Gunnery at Hythe. Shortly after this, instruction became even more specialised, with Corps observers trained at the Brooklands School and Army observers at Hythe,[128] and training was extended to a month, which included ten hours of flying.[129] The 19 new observers who arrived during July were then given as much practice as possible in the air with camera guns and in artillery observation with puff targets.[130] Gunnery also was conducted at a range on the ground, and the observers were required to continue their "buzzing" training with morse code.

In the first week of August 1917, 69 Squadron was declared mobilised. After their climatisation in France, not all the pilots were able to return to the Squadron. Lieutenant G I L Murray was shot down and wounded while with 53 Squadron at Bailleul. Lieutenant H F Taylor crashed badly in 5 Squadron at Acq, and Lieutenant F C Baxter crashed with 16 Squadron at Camblain l'Abbe. In addition, Lieutenant Roy Trout, who had been sent on temporary duty as an R.E.8 ferry pilot, was killed when delivering an R.E.8 (A3772) from Coventry to Lympne on 27 July.

69 Squadron was now equipped with "about twenty brand new R.E.8s"[131] and was ready to move to France. The first section to depart South Carlton, on 17 August, were the motor transport personnel of 69 Squadron: this group comprised 73 mechanics and 57 MT vehicles, and embarked from Portsmouth on the 20th.[132] 69 Squadron became the first Australian squadron to deploy to France, with the aircraft departing South Carlton four days later. In the back seat of the R.E.8s for the transit trip to France, it was decided the observer would be replaced by a groundcrew member:

> They are taking the engine fitters because they can start the engine & fix the machine if anything should go wrong… There will be eighteen machines in the air together & no doubt there will be some excitement when we start & it will be the largest flock of planes seen in this part of England for some time.[133]

The R.E.8s departed South Carlton on the morning of 21 August, with their first leg planned to take them from Lincolnshire to Lympne, the Channel staging base in Kent. Unfortunately, Lieutenant Shapira's R.E.8 (B3421) experienced an engine problem and diverted to Biggin Hill aerodrome, in Kent. Having rectified the problem, the R.E.8 departed. Lieutenant Wilkinson RFC, who was based at Biggin Hill, gave the following eye witness report:

> He got off the ground perfectly and flew straight into the wind to get his proper height; having reached a height of some 600 feet, he turned to get his course. Almost immediately his machine started to spin slowly in flat circles, then the nose dropped and she went down in a spinning nose dive to earth.[134]

The aircraft crashed and burst instantaneously into flames. The crew were killed on impact; dying with Lieutenant Shapira was the backseat occupant, engine rigger 2 A/M Douglas Sloane. It was an unnecessary tragedy as, in retrospect, there had been no need to hurry and catch the Squadron at Lympne, as the R.E.8s had just been held there for the next fortnight. RFC Headquarters was not yet ready to receive the new squadron, so this and bad weather detained the Australians in Kent until 9 September 1917.[135]

When 69 Squadron arrived at Savy in France that day, sixteen squadrons flew the R.E.8 on the Western Front. The early disdain for the R.E.8 changed to tolerance and finally to affection; it became the "Harry Tate", taking the rhyming-slang name of a music-hall comedian. With ultimately 4077 being constructed, the R.E.8 was to carry out the bulk of British cooperation work in the last eighteen months of the war, involving artillery-spotting, contact-patrols and photographic reconnaissance.

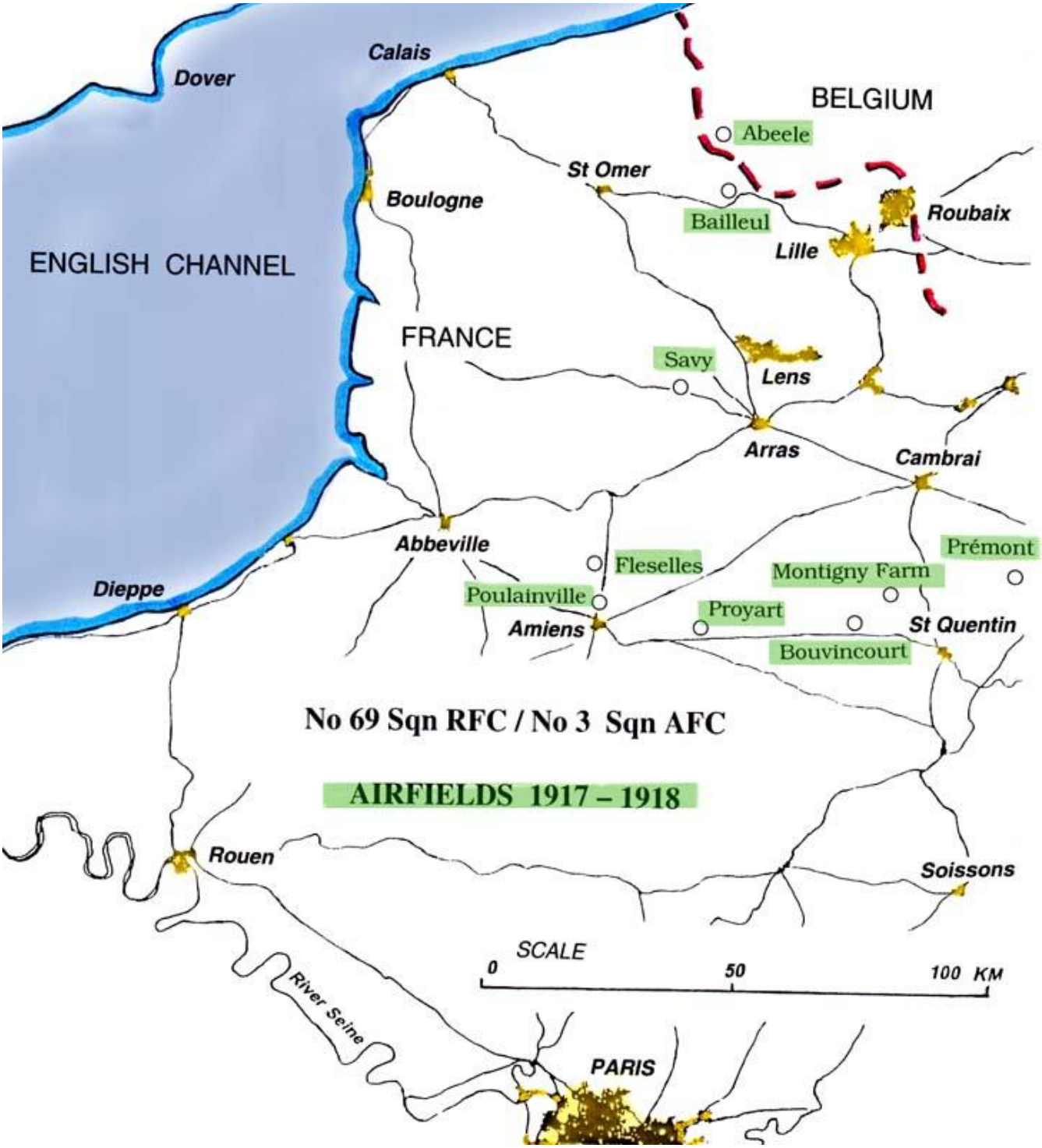
69 Squadron arrived in France at a crucial stage of the war. The French armies were still suffering the effect of the 1917 spring offensive. The British armies had been greatly weakened by the costly battles that had been waged continuously throughout the year. The RFC was now suffering its heaviest casualties since the carnage of Bloody April.

It was vital for the British to rebuild their air strength, and Major General Trenchard's reply to counter any enemy aggression was an even more vigorous offensive policy; this would be accomplished by more fighting squadrons, these being established at the proportion of two scout squadrons to each artillery squadron.[136]

On the German side, the time was critical to initiate a final major offensive. With the entry of the United States into the war in April, the Germans realised they must seize the initiative before the full might of America could be brought to bear. The first American air squadrons were expected to arrive shortly, and accordingly the Germans

instituted a great expansion of their air service, known as the American Program. This commenced over the second half of 1917, with the aim of doubling the number of German fighter squadrons (of 14 aircraft each) from 40 to 80.[137]

Furthermore, now with peace on its Eastern Front – an armistice had been declared with Russia in December 1917 – Germany was able to deploy forces to the Western Front in preparation for a large offensive in what they saw as a window of opportunity. Ultimately, this offensive was to fall on the British front, on the Somme sector.



Covering the Somme, each of the British Armies was allocated an RFC brigade, comprising the Corps wing responsible for short-distance reconnaissance, photography and artillery cooperation, and the Army wing, with higher performance aircraft, to conduct long-range reconnaissance and air fighting. Basically, the share of responsibility was that the Corps wing would photograph within eight kilometres of its front, while the Army wing photographed the area beyond.[138] Over September-October 1917, 69 Squadron was to learn the role of Corps reconnaissance prior to supporting I ANZAC Corps. The timely Policy memorandum in August 1917 emphasised the primary role of army

cooperation: “Finally, it is important, when the two arms cooperate, that each should realise the possibilities and the limitations of the other.” [139]

69 Squadron was now part of the 1st Wing, 1st Brigade RFC, and work was immediately commenced on the Canadian and British XIII Corps fronts, in support of 5 Squadron RFC (the Canadian Corps squadron) and 16 Squadron RFC (the XIII Corps squadron). Throughout September and October 1917, patrols were maintained on the line watching for artillery and for enemy movement in forward areas, and assuming some of the counter battery program of the other squadrons. The work achieved over this introductory two-month period of operations from Savy was highly successful: 142 artillery patrols had been flown with eleven hostile batteries destroyed, 187 photographs taken, and 37 bombs dropped.[140] Although there were some engagements with enemy fighters, there were no serious casualties.

Arming a 69SQN R.E.8 with 20-lb Coopers bombs OCT 1917 *[AWM E01176, colourised by Royston]*

One notable break from reconnaissance and artillery “shoot” sorties was on 8 November, when the entire Squadron’s aircraft were tasked on a bombing raid in support of XIII Corps near Oppy. Captain Anderson’s ‘A’ Flight was successful with 40-pound phosphorous bombs in establishing a smoke screen in front of enemy artillery on Chez Bontemps ridge. Lieutenant Garrett led ‘B’ Flight to drop 20-pound Coopers bombs on enemy positions in Neuvireuil. The pilots of Captain Brown’s ‘C’ Flight flew their R.E.8s solo, to enable the carriage of two heavy 112-pound bombs.[141] These bombs were released from 7000 feet on targets at the eastern side of Oppy. This was 69 Squadron’s first ground attack mission, and truly in the spirit of the Allied policy of the offensive use of air power. The RFC commander, Major General Trenchard, was resolute in his belief in taking the war to the enemy and that “an aeroplane is an offensive and not a defensive weapon”. His directive known as “Future Policy in the Air” had stated:

> *The sound policy then which should guide all warfare in the air would seem to be this: to exploit this morale effect of the aeroplane on the enemy, but not to let him exploit it on ourselves. Now this can only be done by attacking and by continuing to attack.* [142]

The following day, on 9 November, 69 Squadron received orders to proceed on the 12th to Bailleul to take over duty as Corps squadron on that sector, as part of the 2nd Wing of the RFC's 2nd Brigade. On 15 November, I ANZAC Corps took over from VIII Corps, and for the first time I ANZAC Corps was supported by an Australian squadron.

A brand new 69 Squadron R.E.8 A3755 at South Carlton AUG 1917

Part II will cover DEC 1917 to APR 1918, and includes a full detailed list of 3SQN R.E.8s.

MARKINGS of WWI

Overall Colours

The standard varnish from APR/MAY 1916 was *Khaki* P.C.10 (Pigmented Cellulose Spec.10),[143] with clear doped V.114 (Clear Doped Linen) undersurfaces. Lighting conditions varied P.C.10's hue between green and brown.[144]

P.C.10 *Khaki* (FS34087/34088) was a greenish-brown for upper surfaces, *Clear Doped Linen* (CDL, FS13617) [145]

Squadron Markings

Individual squadron markings were introduced for the Corps reconnaissance squadrons in APR 1916, and by the end of that year squadron markings were widely adopted on the Western Front.

Corps squadrons were allocated unit markings on arrival in France: 69SQN R.E.8s were identified by a solid white disc on the fuselage just behind the national roundel,[146] allotted on 19 SEP 1917. In MAR 1918, unit markings were forbidden for all but the fighter squadrons on the Western Front. [147]

Individual aircraft in the Squadron appear to have been identified by large white numbers, but this appears to have changed over October/November 1917 to a more standard method of individual identification: Initially the 18 aircraft were allocated numbers 1 to 18; but this was changed around JAN 1918 to letter codes, so that 'A' Flight aeroplanes were marked A to F, 'B' Flight G to M (excluding I), and 'C' Flight N to S.[148]

This system then apparently remained until the Squadron ceased operations in FEB 1919.

Serial Numbers

The R.E.8s of 69SQN came – like typical RFC contracting over 1917 and 1918 – from a diverse number of contractors.

Most were manufactured by Daimler, Siddeley-Deasy, Austin, Standard, Napier, Whitehead and Coventry Ordnance Works (COW). Each manufacturer had its own interpretation and idiosyncraties in marking the serial number on aircraft – sometimes on the fin, on the rudder, or on the fuselage, and in different styles with addition of a hyphen, apostrophe or fullstop. Then these of course varied when in service or in repair.

Some aircraft were delivered to the Squadron with new serials, having been rebuilt in Aircraft Repair Depots – No.1 (Southern) ARD Farnborough, No.2 (Northern) ARD in Sheffield, and No.3 (Western) ARD in Gloucestershire.

R.E.8 Serial Batch	Contractor [149]	Style of Serial Number [150]
A3531 – A3680 B3401 – B3450 B5001 – B5150 C2231 – C3080	Daimler Company Ltd, Coventry	Black on fin, outlined in white (refurbished aircraft white number on fuselage)
A3681 – A3830 B6451 – B6630 E1 – E300	Siddeley-Deasy Motor Car Co, Coventry	Black on fin, oulined in white
A4261 – A4410 B5851 – B5900	Austin Motor Co, Birmingham	On fin in white
A4411 – A4560 D4661 – D4810	Standard Motor Co, Coventry	Black on fin, outlined in white
A4664 – A4763 C5026 – C5125 D6701 – D6850	Coventry Ordnance Works (COW) Ltd	Black on fin, outlined in white
B2251 – B2300	Whitehead Aircraft Ltd, Richmond	
C4551 – C4600 D4811 – D4960 E1101 – E1150	D Napier & Son Ltd, Dumbarton	On fin in white (also black on fin in a white rectangle) On fin in white (also black on fin outlined in white)

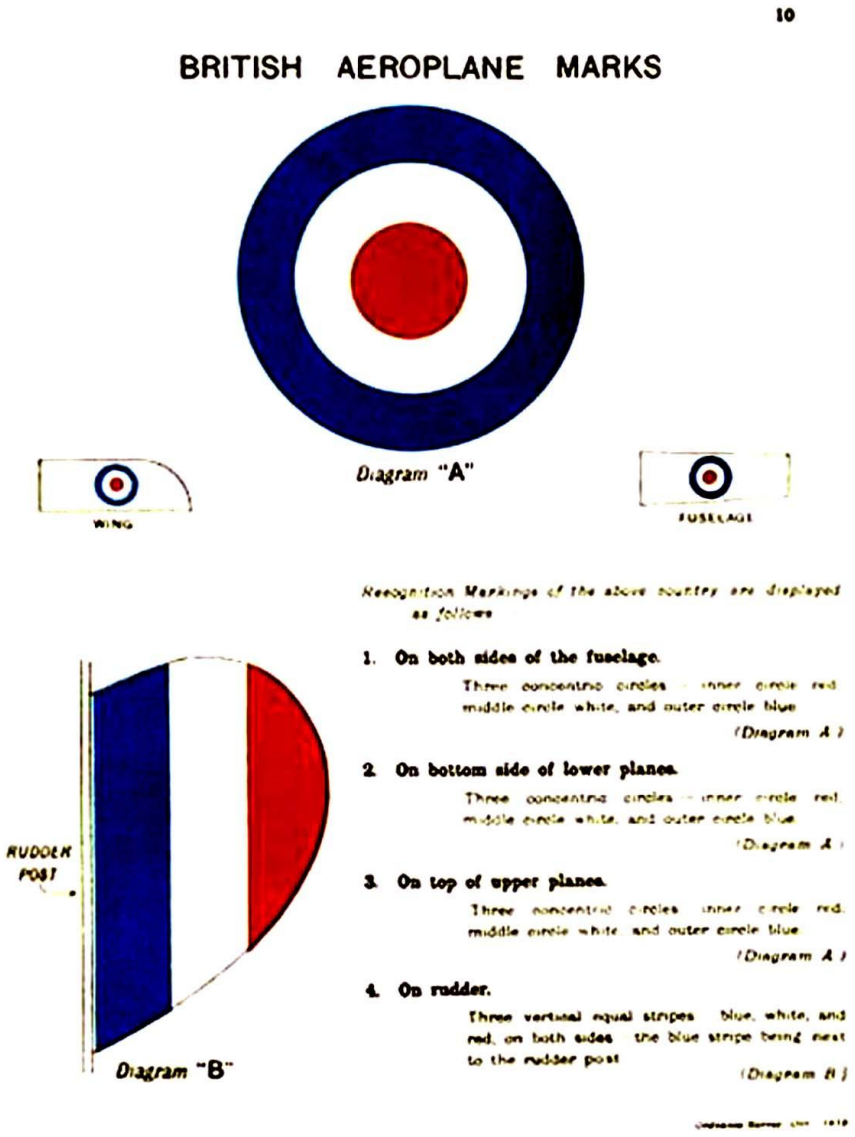
MARKINGS of WWI

National Markings

Roundels - British aircraft were identified by the red, white and blue roundel on the fuselage and mainplanes, which had been adopted on 11 DEC 1914. As P.C.10 *Khaki* had been adopted as standard in 1916, to ensure the roundel was obvious, in MAY 1917 a mandatory thin white outline was introduced.[151]

Rudder Stripes - In MAY 1915, rudder stripes had been added, with blue on the leading edge against the rudder post, a practice similar to that adopted by the French.[152]

This official RFC memorandum, possibly from the Military Aeronautics Directorate, appears to be dated in 1916.



10

BRITISH AEROPLANE MARKS

Diagram "A"

WING

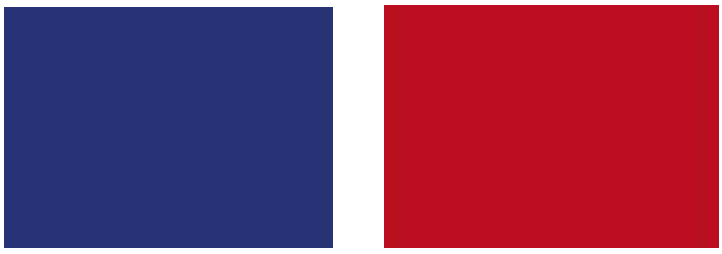
FUSELAGE

Recognition Markings of the above country are displayed as follows

1. **On both sides of the fuselage.**
   Three concentric circles – inner circle red, middle circle white, and outer circle blue
   (Diagram A.)
2. **On bottom side of lower planes.**
   Three concentric circles – inner circle red, middle circle white, and outer circle blue
   (Diagram A.)
3. **On top of upper planes.**
   Three concentric circles – inner circle red, middle circle white, and outer circle blue
   (Diagram A.)
4. **On rudder.**
   Three vertical equal stripes – blue, white, and red, on both sides – the blue stripe being next to the rudder post
   (Diagram B.)

RUDDER POST

Diagram "B"



National Markings colours: Blue VB2 and Red VR3

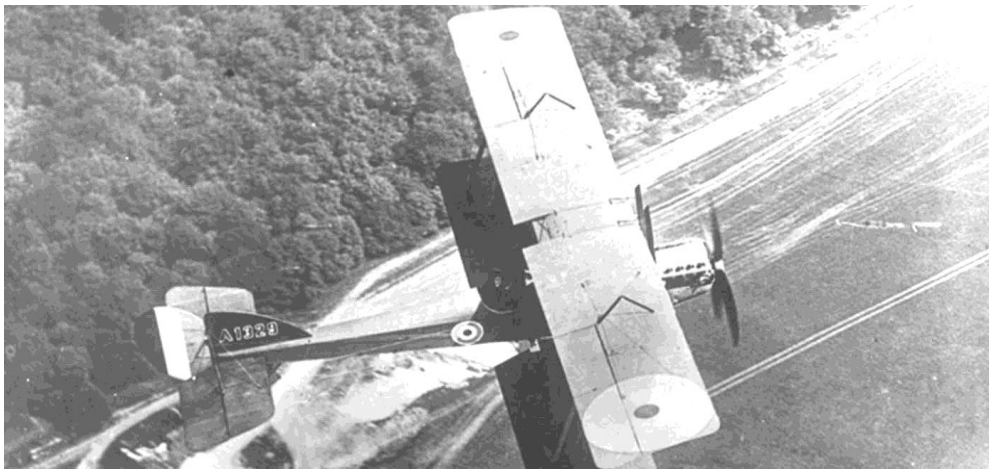
To make National Markings more effective in daylight, the paint specifications were changed from the original VB1 *Blue*, VW1 *White* and VR1 *Red*, to VB2, VW3 and VR3 respectively, improving visibility. Therefore, by 1917, the colour specifications (approximated to FS595a designators) were: VB2 (FS 15056) and VR3 (FS 21105). [153]

B.E.2e TRAINING AIRCRAFT of 69 SQUADRON, SOUTH CARLTON 1917

At least seven B.E.2e trainers were received by 69SQN from JAN 1917, and equipped 'C' (Corps) Flight until JUL, when the first R.E.8s had been received. B.E.2c production during 1916/17 was often switched over to B.E.2e manufacture, and the larger curved fin was no definitive indicator of the aircraft model – more significant was the single pair of struts, the raked wing and horizontal stabiliser tips, and the larger span of the B.E.2e's upper wing.[154]

B.E.2e A1794 was 69SQN's first aircraft delivered in JAN 1917 and crashed during that year *[AWM H12729/17]*

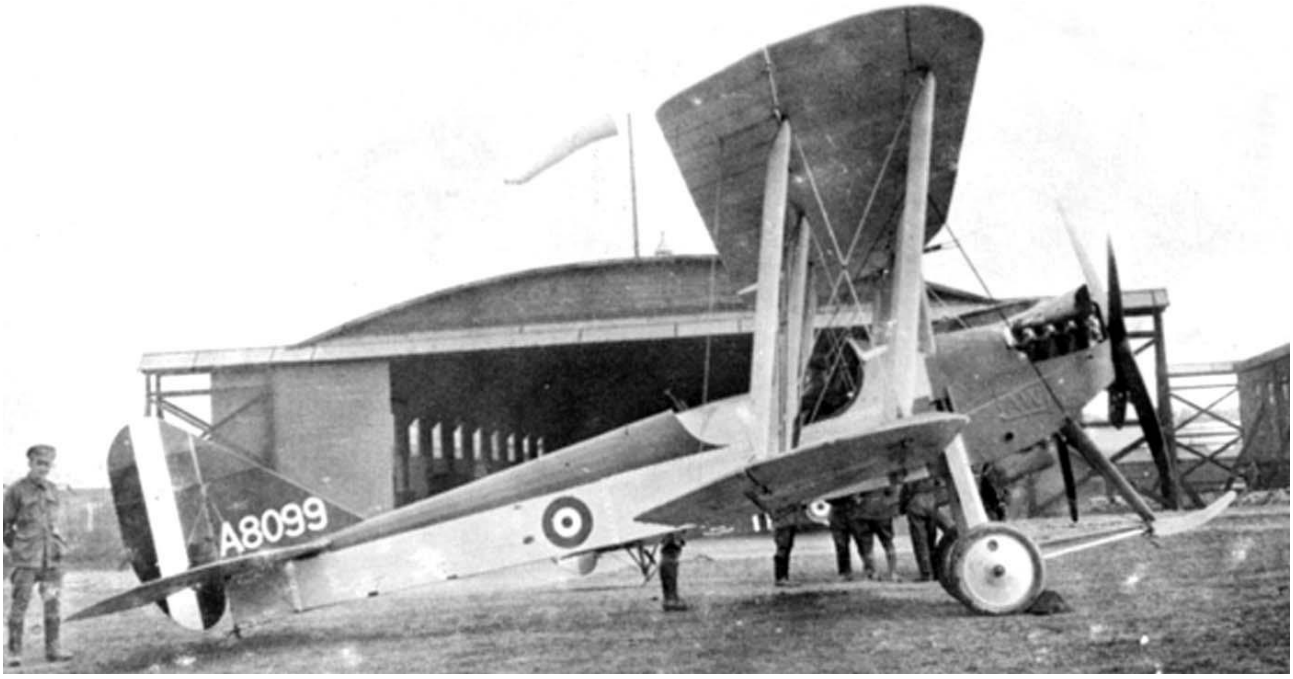
B.E.2e A1329 received by 69SQN in early 1917, with airborne image below *[AWM H11918]*



69 SQN known B.E.2e trainers:
A1329 69SQN cFEB-JUL 1917 [AWM H11918]
A1368 collided with F.K.3 A1508 at Waddington 16 JUN 1917 (2LT T. Bartle killed) [Aeromilitaria, Winter 2010, p.163]
A1372 crashed 1917 [AWM H12729/29]
A1794 received at factory Southport Lancs on 30 JAN 1917, crashed 1917 [AWM H12729/13 and /17; AWM C00819]
A1880 pic by Sloane
A1881 69SQN APR 1917, "Mr H Teesdale-Smith of Adelaide", crashed JUN 1917 at Waddington [155]
A1882 on strength during JUN 1917, named "Australia No1, SA No1, The Sidney Kidman"

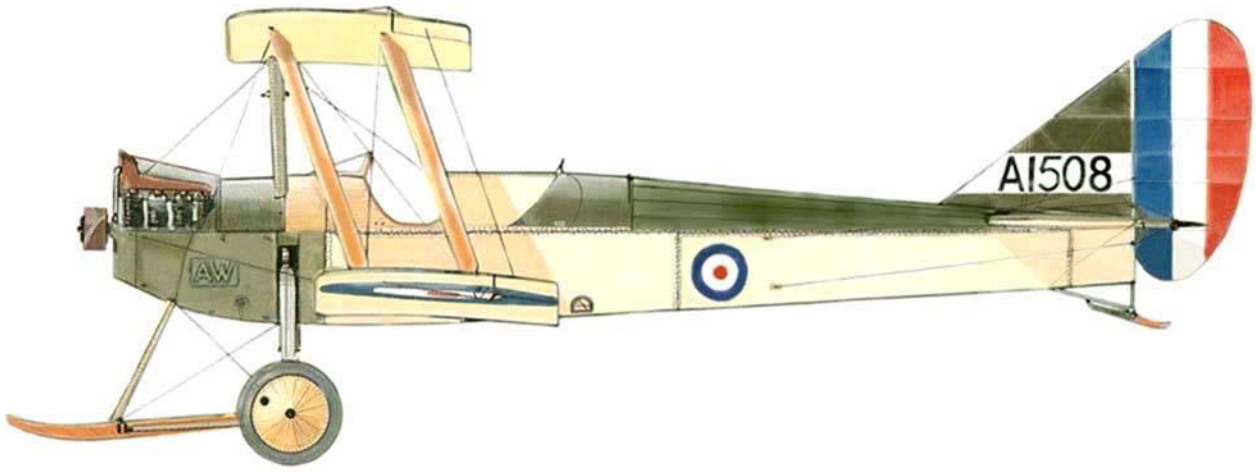
F.K.3 TRAINING AIRCRAFT of 69 SQUADRON, SOUTH CARLTON 1917

The F.K.3 was a development by Armstrong Whitworth of the B.E.2 design. 69QN aircraft were from production batches A1461-A1510 and A8091-A8140 from Hewlett & Blondeau Ltd of Luton, with dual controls. F.K.3s were mainly used by the training squadrons in UK, and known as the 'Little Ack', to differ from the larger F.K.8 'Big Ack'.



F.K.3 A8099 on 69SQN South Carlton JUN 1917, off strength by AUG 1917 as R.E.8s arrived *[AWM H12729/42]*

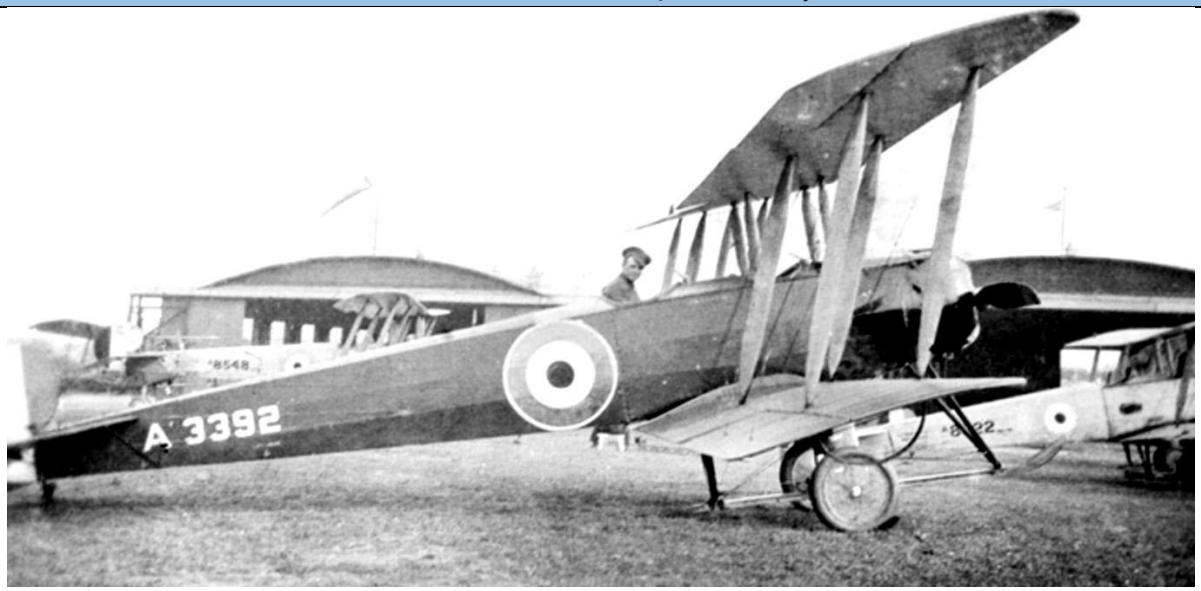
F.K.3 Little Acks tended to be coloured in overall CDL with *Battleship Grey* engine cowl, and just the upper surfaces in P.C.10 *Khaki* because of a shortage needed for front-line aircraft. Different interpretations of fin colouring and serial marking could indicate different manufacturers and contracts – however A8099 (above) from Hewlett & Blondeau Ltd of Luton and (below) A1508 were from the same manufacturer. This type was flown for 69SQN training from JUN, probably only to late JUL 1917 to prepare crews transitioning to the heavier R.E.8 service machine.



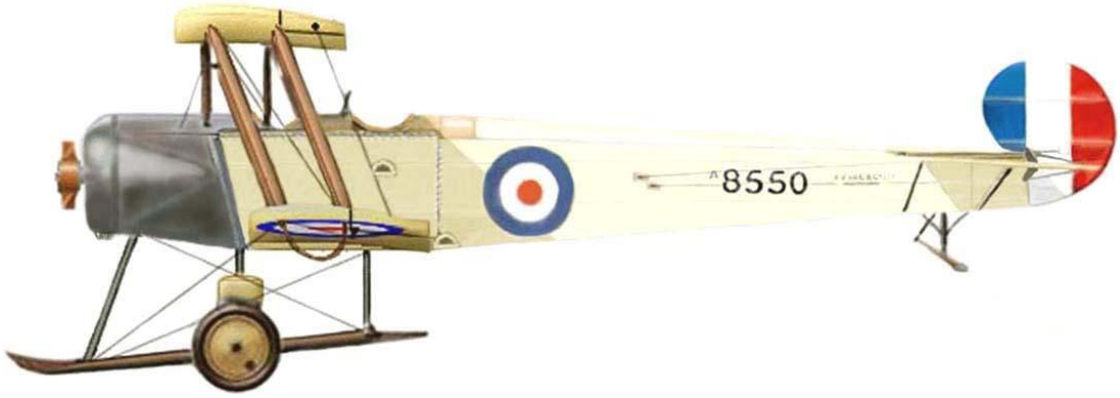
69SQN AW F.K.3 'Little Ack' A1508 which collided with 69SQN B.E.2e A1368 in JUN 1917

69 SQN known Armstrong Whitworth F.K.3 trainers: [156]
A1508 collided with B.E.2e A1368 at South Carlton 16 JUN 1917 (2LT H H Wilson RFC not hurt)[Aeromilitaria, Winter 2010, p.163]
A8099 on strength by 13 JUN 1917 [AWM H12729/42; Aeromilitaria, Winter 2010, p.163]
A8101 on strength by 12 JUN 1917 [Aeromilitaria, Winter 2010, p.163]
A8102 on strength by 11 JUN 1917, to 37 Training Sqn at Spittlegate 10 AUG 1917[Aeromilitaria, Winter 2010, p.163]

AVRO 504 TRAINING AIRCRAFT of 69 SQUADRON, SOUTH CARLTON 1917



69SQN Avro 504A A3392 in P.C.10 cMAY 1917, with CDL finish A8548 and A8522 in background ***[AWM H12729/45]***

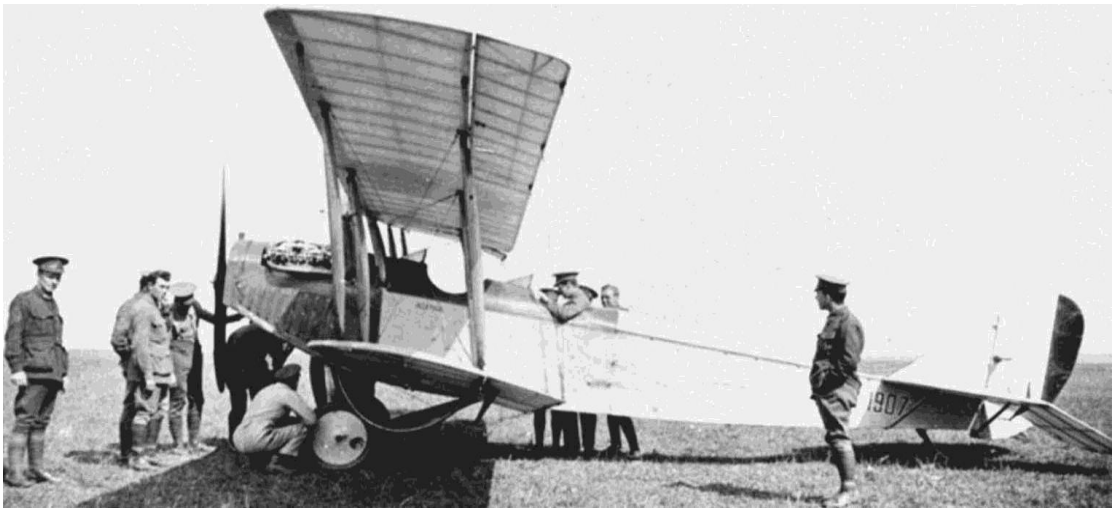


69SQN Avro 504A accidents at South Carlton: (above and left) A8550; and (right) A8522 crash 15 JUN 1917

69 SQN known Avro 504A trainers:
A3366 crashed, date n.k. 1917 [AWM H12729/12, AWM H12729/27]
A3392 [AWM H12729/45]
A8522 crashed South Carlton 15 JUN 1917[157] [AWM H12729/45]
A8548 [AWM H12729/45]
A8550 crashed, date n.k. 1917 [AWM H12729/15, AWM H12729/20]
A8552 crashed 14 JUN 1917 (2LT Gleeson RFC died of injuries) [AWM H12729/12, AWM H12729/27]

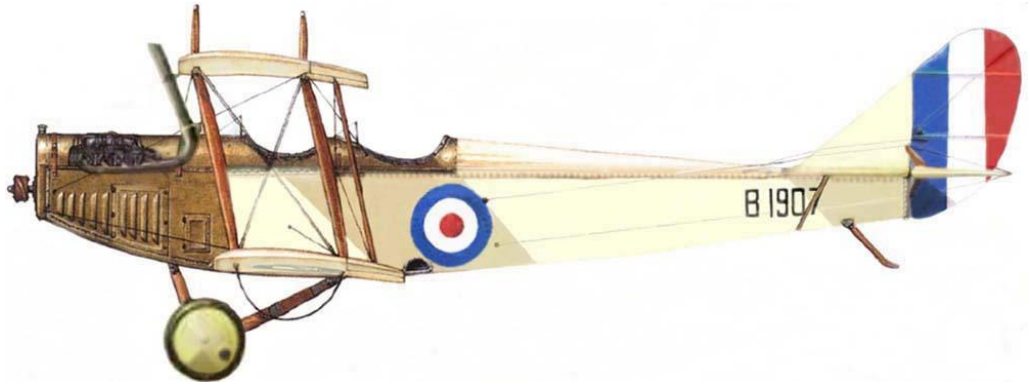
Also one known Avro 504B B389 crashed 4 APR 1917 (Cdt Harry Warren killed). The 504B was a naval trainer diverted from the RNAS to the RFC Training Squadrons (identified by its fin with plain rudder, and 80-hp Gnome).

JN-4A JENNY TRAINING AIRCRAFT of 69 SQUADRON, SOUTH CARLTON 1917

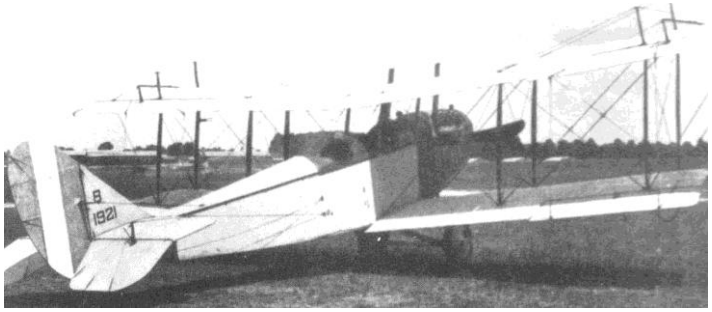


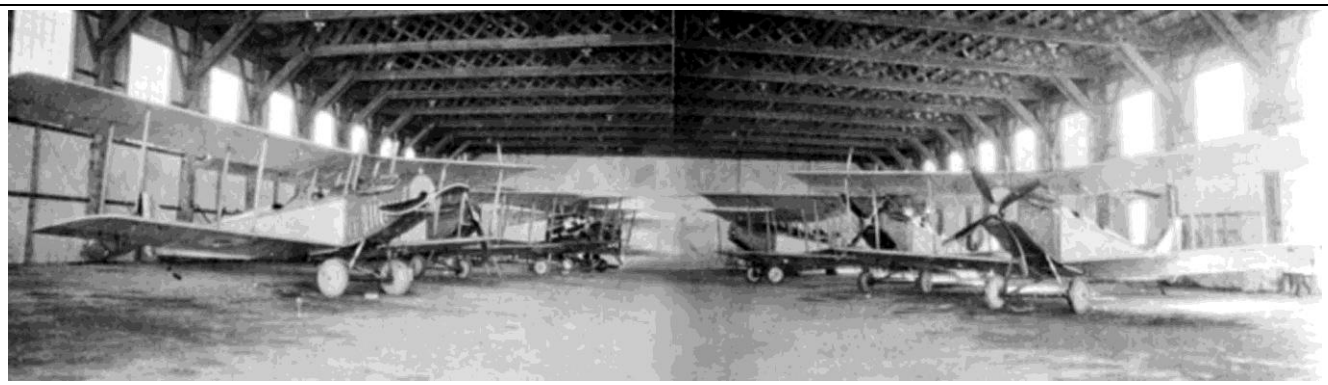
69SQN JN-4A Jenny B1907 in overall CDL – one of about five Jennys with 69QN ***[AWM H12729/10]***

Serial batch B1901-B1950 was an RNAS contract from the US for 50 Curtiss JN-4A Jennys diverted to the RFC[158] – JN-4As flew with various RFC training units, including 69SQN working up for operational service prior to France.[159]



B1921 and B1926 were JN-4As from the same RNAS contract (but not 69SQN) showing differing markings





This hangar is apparently at South Carlton with 69SQN's Jennys and Avro 504s [AWM H12729/09]

69SQN known JN-4A Jenny trainers – delivered from JUN 1917:AWM H12729/09 hangared five Jennys – known B1907 from JUN 1917 [AWM H12729/10]; B1911 from JUN 1917.[160]

Getting the RAAF Numbers right in WW2 Part 4; the 1940-1943 Transport Operations and formations **by Gordon R Birkett @2018**

We touched briefly in Part 1 the 1942-1943 in regard of the transition to C-47s. Here we will look at the subject in more detail per 1939 to 1943.

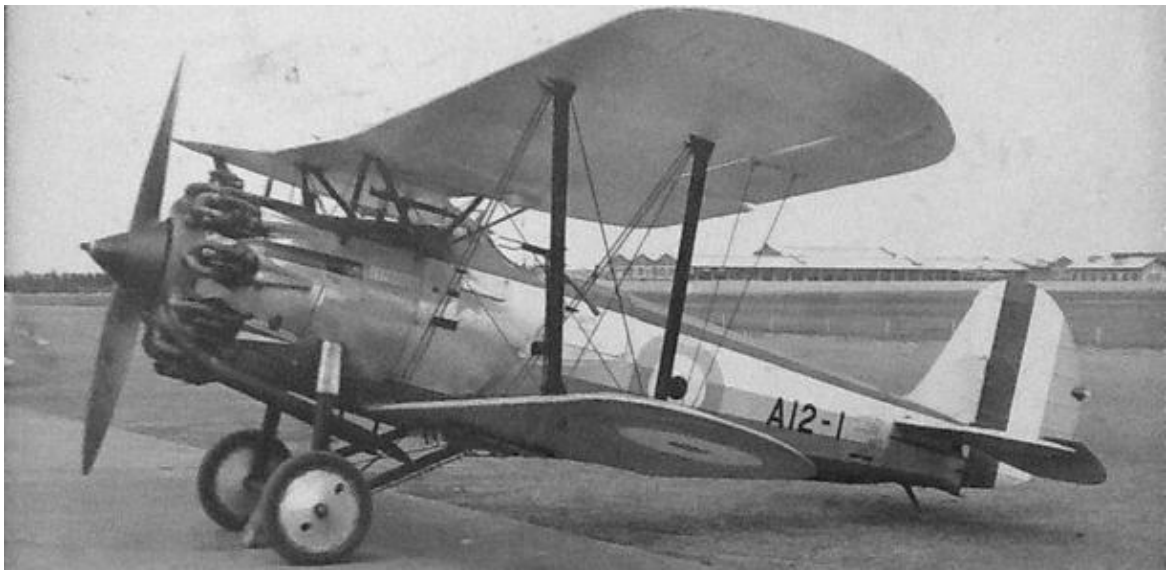
At the commencement of the Pacific War, 8th December, 1941, the RAAF did not have a single dedicated Transport Squadron on establishment. Until February 1942, only two Communication Flights (CF); No 1CF and No 2CF, who flew various light aircraft in support of the stated RAAF Transport Requirements.

Background

The former originated as the Communication Flight from the division of the Communication and Survey Flight at Laverton RAAF Station, Victoria on the 1st November 1939.

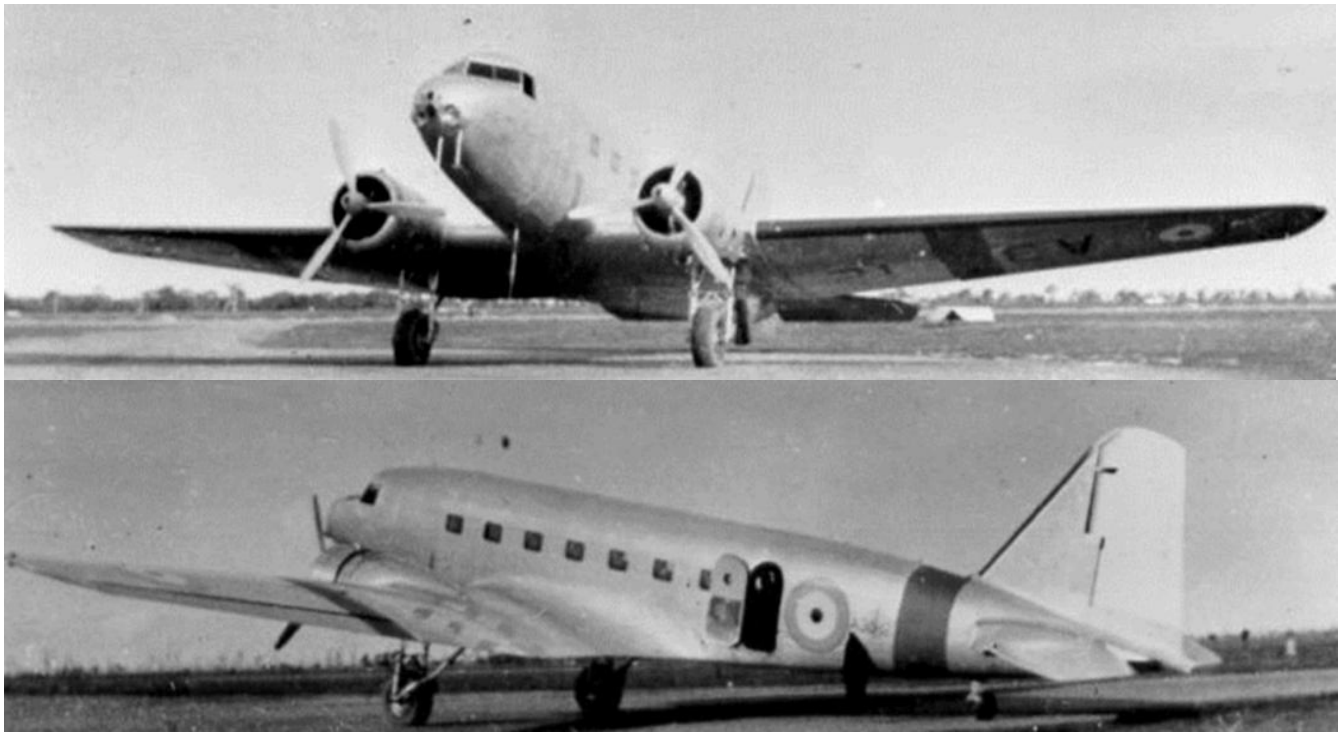
When forming at Laverton in mid November, its strength consisted of a mixed flight of six aircraft (Two Hawker Demons (**A1-1/4**), three Bristol Bulldogs (**A12-1/3/6**) and one Avro Trainer).

On the 2nd December 1940, by which time the Flight changed and was numbered as No1 Communications Flight with some types on strength being replaced by more suitable transport types (Fairchild 24R **A36-1**, Moth Minor **A21-20**, Vega Gulls **A32-1** and **A32-2** and a de Havilland DH-84 Dragon **A34-3**).



Bristol Bulldog A12-1 at Laverton

By the start of the Pacific War, the aircraft strength had increased to nine aircraft (including one Hawker Demon for Army/Navy Co-operation, two loaned Avro Ansons placed on strength, along with previous types added; one DC-2 (**A30-12**) and a second Fairchild 24R (**A36-2**) during 1941.



No 2 Communications Flight was formed on the 2nd December 1940 and located at Kingsford-Smith Airport at Mascot, Sydney, with the first two aircraft (Moth Minor **A21-5** and Miles Falcon **A37-1**) taken on charge on the 19th December 1940 from No 4 Elementary Flying Training School, based there.

Its first twin engine transport type, de Havilland DH-84 **A43-1** (ex VH-UXS), would be only taken on charge on the 19th January 1942.

As noted, No 1CF had on strength a DC-2, allotted on the 10th June 1941. The purchase of this type was actually for another reason for at the beginning of 1940, the RAAF had placed an order for fifteen de Havilland DH-89A aircraft, for use under the Empire Air Training Scheme, to train Wireless Air Gunners in a flying classroom environment.

The UK Air Ministry advised that at that current time, that the order could not be fulfilled and that an alternative source for a similar type could or may be obtained from the United States. Enquiries in the United States resulted in the purchase of ten DC-2s from Transcontinental and Western Air (Inc), along with a supply of spares (Including ten

engines) as they were replacing the type in operation with the DC-3. The Order was signed on the 3rd September 1940, with the first DC-2 (**NC13737, later A30-5**) being unloaded at Melbourne and the being transported to Essendon for reassembly in September 1940. *The aircraft on delivery had accrued some fourteen thousand eight hundred and eighty-eight hours on the airframe.*

It was delivered to the RAAF on the 2nd December 1940, and then issued to No 1 Wireless Air Gunnery School on the 12th January 1941. The ten were given RAAF Stores numbers sequence **A30-5 to A30-14.**

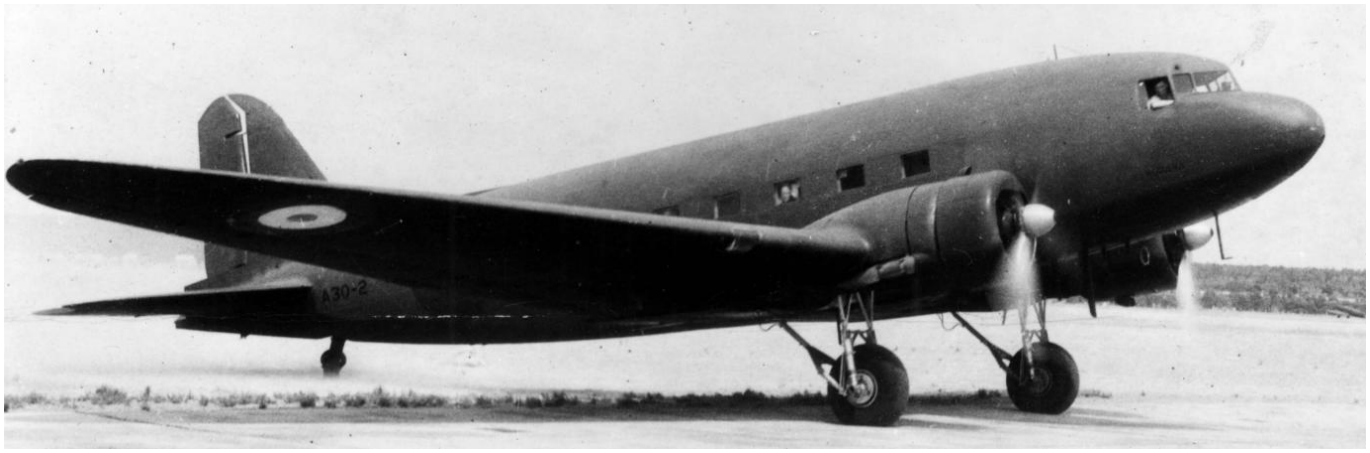
The missing **A30-1** to **A30-4** RAAF Stores Numbers refers to four previously leased DC-3s .

Two views of VH-UZJ/ in ANA Service and when as A30-1 landing with its park brakes engaged. *Note Fuselage Roundel location non-symmetries, ie staggered*

.

These provided the centric In-use Establishment of aircraft for No 8 Squadron RAAF when it was formed on the 11th September 1939. A30-1 and A30-2 arrived at their RAAF Station Canberra on the same day, still in passenger guise and fittings.

A30-3 and **A30-4** remained at Essendon undergoing conversion and camouflaging before arriving and replacing the first two on the 25th September 1939. These first two were also converted and camouflaged soon after.



A Picture of A30-2 in use with No 8 Squadron RAAF.

A30-2 (Pictured) was flown to Essendon and returned to Australian National Airways on the 9th February 1940On the 16th May 1940; RAAF HQ requested that the last two were to be returned to ANA on request.

This happened on the 17th and 23rd May 1941 respectively, for **A30-3** and **A30-4. A30-1** was returned to ANA on the 11th June 1940 and No 8 Squadron RAAF continued on with the Lockheed Hudson after its first was delivered on the 20th May 1940.

However, the use of some of these four aircraft under contract after the commencement of war in the Pacific would see aircraft again used, at times for troop transportation, *albeit sans A30 Serials.*

*Of the DC-2s, both **A30-7** and **A30-8**, on establishment with No 2 Wireless Air Gunners School (No 2WAGS) , located at Parkes, NSW, were assigned for Transport Duties for the USAAF at Darwin on the 18th January 1942, complete with crews.*

*Whilst **A30-7** was returned to 2WAGS on the 31st January 1942, it was advised that **A30-8** had been shot down after leaving Soerabaja, Java during a flight to Koepang, Timor on the 26th January 1942 somewhere near Wiangapoe on the island of Soemba. <u>This was the first "operational" RAAF Transport loss.</u>*

They had been ferrying combined some twenty-two crew chiefs and Armourers for the 17th Pursuit Squadron (Provisional) USAAF and were returning to Darwin. [161]Eventually the survivors would serve in No 36 (Transport) Squadron RAAF from March 1942 onwards as pure transports, after transfer from the WAGS training role and replacement by substituted types.

The Transport Establishment snapshot as of the 10th October 1942

By October 1942, there were a total of four RAAF Land Transport Squadrons formed and allocated:

- No 33 Squadron (B Flight) established 16th February 1942 per HD75, responsible for North Eastern Area and based at Townsville. By late 1942 it was based in Port Moresby.
    - In Use Establishment eleven aircraft: four Ansons (**AW674, AW918, AX120, and AX633**), five DH-82A Tiger Moths, DH-84 Dragon (**A34-7**) and Miles Falcon (**A37-6**).
- No 34 established 23rd February 1942 per HD74, responsible for North Western Area and based at Darwin.

- In Use Establishment eight aircraft: Three Ansons (**AX236, AX630 and DG865**) and five DH-82A Tiger Moths (**A17-114/223/470/520 and 551**).

- No 35 established 11th March 1942 per HD76, responsible for Western Area and based at Pearce.
  - In Use Establishment four aircraft: one DH Moth Minor (**A21-9**), one DH83 Fox Moth (**A41-1**) and two Fairey Battles (**L5774** and **L5779**) for drogue towing. Later that month, some four DH-82As (**A17-477/478/478** and **480**) and a single Anson(**DJ751**) were added
- No 36 established 11th March 1942 per HD77, responsible for Southern Area and based at Laverton, now based at Townsville replacing No 33 Squadron.
  - In Use Establishment fourteen aircraft: Seven DC2s, one DH-82A Tiger Moth, one Fairchild 24, two DH-84 Dragons, two DH86 and one DH89.*(Serials listed elsewhere in article)*

DH83 Fox Moth A41-4 VH-UZC

Empire Flying Boat Transports in scope for 1942-1943

As stated, due the retention of No 10 Squadron RAAF in the UK, two leased QANTAS Shorts Empire Flying Boats (Ex BOAC, held QANTAS, G-ADUT "*Centaurus*" **A18-10** and G-AEUA "*Calypso*" **A18-11**) and two Supermarine Seagulls were on the establishment of No 11 Squadron RAAF from 29th June 1940 onwards. A further two QANTAS Shorts Empire Flying Boats were requisitioned in mid 1940 (VH-ABC "*Coogee*" **A18-12** and VHABB "*Coolangatta*" **A18-13**).

By late 1941, these aircraft were part of the In-use Establishment of a combine No 11 and No 20 (GR) Squadron RAAF. Deemed necessary for the transportation of urgent supplies after a sufficient numbers of Catalina were received, it was decided to form a transport Squadron with the four Short Empire Flying Boats held. These were allotted on the 16th February 1942, complete with crews from No 11 and No 20 Squadrons RAAF.

Different perspective shot, A18-13 in pre-war service as VH-ABB Coolangatta

A18-12 in pre-war service as VH-ABC Coogee

These were used as the first in-use establishment aircraft for "A" Flight, No 33 (Transport) Squadron RAAF, having been formed on the 16th February 1942 as the first transport squadron for the RAAF.

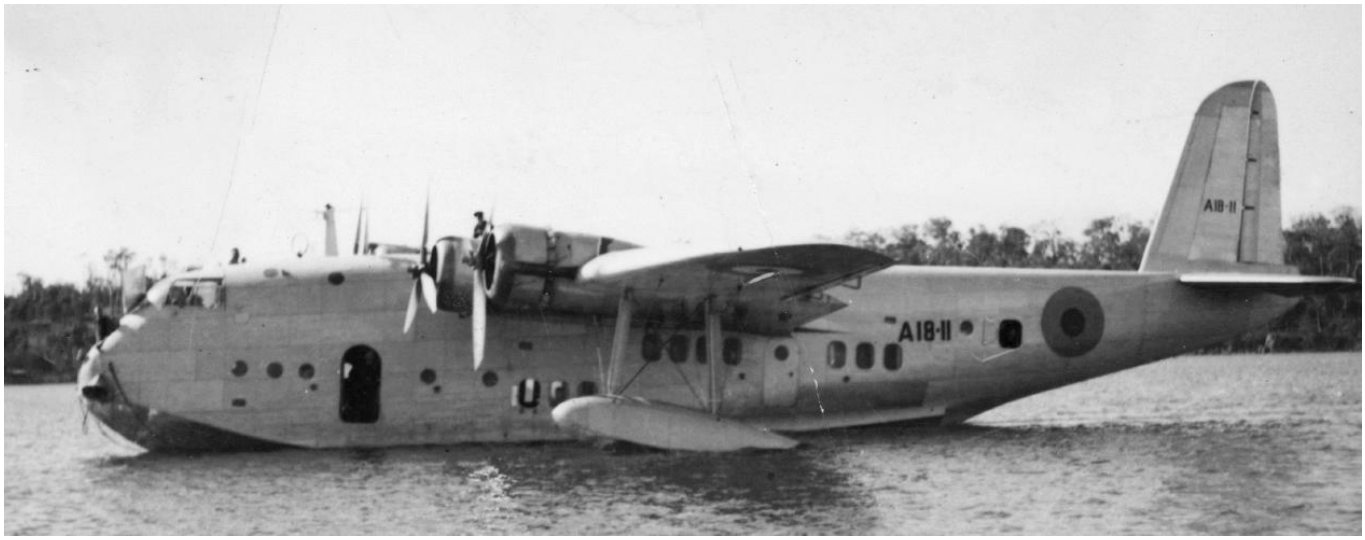
"B" Flight would be established and equipped by June 1942 with land based aircraft types, initially with an in use establishment of four aircraft (two DH-84 Dragons (**A34-7** and **A34-8**), one Lockheed Vega (**A42-1**), and one Ford Tri-motor (**A45-2**)).

Just twelve days later, **A18-12**, under command of F/O Robert J Love Serv#400004, on alighting at Townsville Harbour after a test flight, crashed 1802hrs, killing six, (WAAF Cpl Ray S Diggles Serv#93900 was not recovered, along with LAC J Nicholson Serv#17708)and injuring the remaining five.

Unfortunately a few days later, a further one, **A18-10** was destroyed by the Japanese during their raid on Broome, on the 3rd March 1942. This left the Flight with no serviceable aircraft, until one, **A18-13** returned ex Rose Bay after maintenance on the 4th March 1942. A18-11 returned ex Rose Bay on the 26th March 1942.

A fifth aircraft of the type, QANTAS Leased BOAC refugee Shorts Empire Flying Boat, (G-AFPZ "Clifton", **A18-14** from the 9th March 1942) would join the original surviving example; bringing the flight establishment up to three aircraft when it preceded **A18-11** to Townsville on the 24th March 1942.Regular freight transportation flights originating from Townsville Harbour to Port Moresby were officially instigated on the 5th March 1942 and continued for the next month.

*A notable flight included a trip by **A18-14** to Noumea on the 8th March 1942, then to Vila (New Hebrides) and return to Noumea, then back to Townsville on the 12th March 1942.*[162]



On the 24th April 1942, **A18-11** (pictured above) would land a contingent of Australian Troops at Cape Melville from Townsville, with three 24 Squadron RAAF Wirraways flying top cover, following reports of a Japanese Landing from two Schooners. [163]

Later in that month, they were busy locating downed 8th Pursuit Group Airacobra Pilots who forced landed or crashed whilst ferrying ex Townsville to Port Moresby. From April to August 1942, the Unit continued to run regular services from Townsville to Northern Locations in SWPac.

On the 2nd May 1942, sadly, the Commanding Officer of No 33 Squadron RAAF, Sqn Ldr C R Gurney, was killed along with the captain of 22nd BG (Medium) B-26 FY**40-1426**, when returning from a bombing raid on Rabaul when it forced landed on Ouri Island of the Trobriand Island Group. He was temporary assigned to "bed in" PNG conditions for the Group's pilots and crews.

A18-14 undergoing a overhaul March 1942 at Rose Bay

A more noticeable mission, <u>without its own aircraft and limited experienced command pilots,</u> was when two of No 33 (Transport) Squadron's Shorts Empire Flying Boat Captains (F/Lts Mather and Fader) accompanied a trio of mixed Transport aircraft to carry Australian Army Commandos from Townsville via Coen, then Horn Island to Port Moresby,

then Bulolo, to their starting off point at Wau PNG for a raid on Salamana on the north coast at Papua on the 21st May 1942.

Sans Camo, a highly polished ANA VH-UZJ ex A30-1 pictured at Port Moresby Strip on the 21st May 1942.[164] GRB Collection

Aircraft were 21st TCS's C-53 ***FY41-20053*** *("Foitle Moitle", Co-Pilot F/Lt Fader), C-47-DK 41-****7733****(*"Eager Beaver", *Co-Pilot F/Lt Maher), each carrying twenty-two passengers and Airlines of Australia's DC3* ***VH-UZJ*** *carrying twelve.*

The raid itself was photo/film documented by Australian War Correspondent Damian Parer). F/Lt Michael Vaughan Maher Serv#403834 made three trips to Wau in C-47 **41-7733** (assigned DAT Call sign VHCDM with **41-20053** being VH-CCB).They returned direct to Townsville ex Wau on the 24th May 1942.

Numerous survey flights were also carried out after terminating their transport flights to Port Moresby, ex Townsville, locally in PNG, before their return to Townsville.

"A" Flight (Flying Boat) Examples:

- 26th May 1942 to 1st June 1942, **A18-11** flew from Townsville, via Cairns to Port Moresby to collect a US Army Survey Team to inspect and select an airstrip at Abau, Cloudy Bay and Mullins Harbour in PNG.
- 29th - 30th June 1942, **A18-13** flew to Port Moresby, terminating Freight service to carry a survey party to Buna (Before the Japanese landed) to inspect sites for airfields. The mission was cancelled but was actually performed a week and a half later
- 10th -11th July 1942. One of those who went ashore was Lt Col Buzz Wagner, C O of the 8th Fighter Group. On the same day, they conveyed another Survey team to Deboyne Island in the Louisiade Archipelago to inspect the abandoned Imperial Japanese seaplane Base there and several Japanese aircraft hulks. On the 12th July 1942, collected the Buna Survey Team and returned to Port Moresby. During that time the aircraft was moored at Fyfe Bay twice. [165]

21st TCS USAAF C-53 41-20053, pictured on the ground 22nd May 1942 at Bulolo. GRB Collection

Rescue of survivors of the MV Mamuta[166]

At 1034 Hrs , 6th August 1942 the 300 ton Burns Philip Trading Company's Merchant Vessel Mamutu carrying a crew of thirty-nine and one hundred and three passengers(including woman and children) was sailing from Port Moresby, PNG to Daru Island, located at the very tip of the Torres Straits.

On the following day at 1110hrs she radioed that she was being attacked by a surfaced Japanese Submarine (later Identified as IJN RO-33) using gunfire. Following the sinking, the submarine completed their action by machine gunning those who managed to take to life rafts and dinghies.

All in all, some thirty-two crew and eighty-two passengers were killed in this action.

A Shorts Empire Flying Boat, **A18-11** with F/Lt Maher in command, with eight crew, was tasked ex Townsville later that afternoon to Cairns, under Mission TOW 14, where it refuelled and stayed overnight at Cairns prior to a dawn take-off.[167]

Now in camouflage, A18-11 is moored at Cairns FOB May 1942. Source: GRB Collection.

The flotsam of damaged and wrecked rafts and Life boats was sighted, and a Life Raft dropped by a crew of another aircraft early that day. **A18-11** however did not locate any such flotsam. The aircraft returned to Horn Island for refuelling and an overnight stay later that evening.

Taking off at 1125Hrs on the 8th August 1942, the crew of **A18-11** did their first search which resulted in no such sighting. Following its return to refuel at Horn Island, they took off again on a second search.

Some fifteen survivors were sighted, (09.00 degrees South/144.08 degrees East) and an attempt was made to do a sea landing to collect survivors.

Unfortunately, on landing, the aircraft suffered a "bottom blow in" where the spar compartment was, then it collapsed suddenly filled with rushing water and sank, resulting in the death of one crew member (LAC G J Edwards Serv#25843) who was apparently trapped.

As for the survivors of the MV Mamutu, only one was alive from tis flotsam. The crew and the sole survivor in hand remained in their life Rafts until they reached land and a village north of the mouth of the Fly River (PNG).

By the 17th August 1942, they had trekked to an Australian Army Outpost at Kikori inland from Deception Bay some two hundred and fifteen miles north west of Port Moresby.

It would be the 28th August 1942 before the party had arrived at Port Moresby.

More missions were carried out by No 33 Squadron until both aircraft and crews were transferred to the newly established No 41 Transport (Flying Boat) Squadron raised at Townsville on the 21st August 1942 under Establishment HD125. Establishment was three Empire Flying Boats and four Dornier Flying Boats.

Squadron Empire Flying Boats (EFB) Missions commenced on the following dates without missing a heart beat with No 33 Sqn RAAF Crews and later converted No 41 Sqn RAAF Crews

- 21st August 1942 EFB Townsville to Port Moresby, and return.

- 22nd August 1942 EFB Townsville to Port Moresby, return as first No 41Sqn RAAF flight
- 25th August 1942, EFB TOW 99 Townsville to Port Moresby, then Milne Bay then Townsville
- 26th August 1942 EFB TOW51 Townsville to Port Moresby, return
- 27th August 1942 EFB TOW52 Townsville to Port Moresby, return
- 28th August 1942 EFB TOW53 Townsville to Port Moresby, return
- 30th August 1942 EFB TOW54 Townsville to Port Moresby, return
- 30th August 1942 EFB TOW55 Townsville to Port Moresby, return
- 31st August 1942 EFB TOW56 Townsville to Port Moresby, return
- 3rd September 1942 EFB TOW57 Townsville to Port Moresby, return

However, until mid June 1943, they had only two Empire Flying Boats (A18-13 and A18-14) on establishment, with no Dornier Flying Boats in sight. At times due to maintenance, it would dip down to one aircraft on establishment. *From a Squadron Flight of four Empire Flying Boats with No 33Sqn RAAF, it was now the main equipment of a Squadron with just two on strength with No 41 Sqn!*

The first No 41 Squadron RAAF Dornier Do-24K arriving at Townsville was **A49-3** on the 10th June 1943, which made its first trip to Moresby on the 13th June 1943. She was followed by **A49-1** on the 14th June 1943, **A49-5** on the 26th June 1943, and **A49-2** on the 30th June 1943. **A18-14** had been sent to Rose Bay for overhaul.

What would become a troublesome aircraft to operate, commenced almost on day one on operations with **A49-3** stranded in Port Moresby for an 80 hourly due to engine problems for several days, and **A49-5** with losing a engine cowl and engine problems by the end of the month, resulting in both being unserviceable for ten and fourteen days respectively during that first month.

The pair of Empire Flying Boats continued on.

On the 4th July 1943, the CO of the Squadron grounded both **A49-3** and **A49-5** due to faulty electrical issues that may cause either a possible in-flight fire. Both departed back to Lake Boga for electrical overhaul on the 9th July 1943. On the 19th July 1943, it was decided that **A49-1** should also be sent back to Lake Boga for re-wiring. In its place **A49-4** was to be issued.

The Squadron did not fly any aircraft to the end of the month, following the 13th July 1943 when **A18-13** went also to Rose Bay for overhaul. It would not be until the 8th August 1943, with **A49-4**, that transport operations recommenced to Port Moresby. For the whole of the remaining month, this was the sole aircraft in use n establishment aircraft, until it too suffered a fuel pump failure on its starboard engine on the 28th August 1943. *It had flown some 182 hours during the month.*

An unacceptable service record in light of the smaller number of Empire Flying Boat, and the lengthy in service period of some ten months since formed as an Empire and Dornier Flying Boat Squadron in August 1942. [168]

A49-4, Coded DQ-G, which during August 1943, was No 41 Squadron's sole flying boat. Source ADF-Serials

The following month saw the return of **A49-3** and **A49-5** both of which still suffered a low serviceability rate of three and eighteen days respectively, whereby **A49-4** was unserviceable for some twenty-two days. The following months, the serviceability rate was getting even lower:

- At the end of October 1943, even with more aircraft returned from Lake Boga, the unserviceability rate climbed with **A49-1** 22 days, **A49-2** 25 days, **A49-3** 20 days, **A49-4** 15 days and **A49-5** ten days unserviceable respectively.
- At the end of November 1943, the unserviceability rate climbed even more with A49-1 19 days, **A49-2** 26 days, **A49-3** 22 days, **A49-4** 16 days and **A49-5** 26 days unserviceable respectively.
- At the end of December 1943, the unserviceability rate climbed even more with A49-1 29 days, **A49-2** 26 days, **A49-3** 20 days, **A49-4** 31 days and **A49-5** 15 days unserviceable respectively.
- It just didn't get much better thereon..... One Dornier, **A49-5** caught fire and sank in Darwin Harbour with WAG F/Sgt Wall badly burnt on the 11th March 1944.[169]

The answer to a more reliable aircraft replacement was answered on the 1st February 1944, when four Martin Mariners **A70-4**, **A70-5**, **A70-11** and **A70-12** were allotted, with the former alighting Townsville on the 18th February 1944. The first Transport mission was flown in **A70-11** on the 11th February 1944 to Port Moresby.

A further example, **A70-2** was allotted on the 23rd February 1944.

The two types operated together for a short time, with the exception of **A49- 3** which, as attached to 8th Communications Unit, with a crew, was on Air Sea Rescue flights near Milne Bay, PNG during February 1944. By late May 1944, all of the remaining Dornier Do-24Ks were sent south to Lake Boga for storage and then disposal.

The urgent need for RAAF Twin Engine Transports 1942-1943.

The Directorate of Air Transport (DAT), Allied Air Forces, South Pacific Area was formed on the 14th March 1942, and later amended again on the 20th April 1943 when sufficient RAAF C-47s became available, per Organisation Memorandums Nos 247 and 283 respectively, whereby all appropriate orders for control, loading and dispatched were to be originated from.

As noted, the RAAF was desperately short of suitable transport aircraft. Having missed out on obtaining ex Refugee KLM and NEIAF Transports, they had to look within. Most of the surviving RAAF DC-2s, previously used as Wireless Air Gunner Flying classrooms, were issued to the newly formed No 36 (Transport) Squadron (formed 11th March 1942), starting with **A30-14** received by the 1st April 1942 at Laverton RAAF Station.

During this month, **A30-11** and **A30-13** arrived. On receipt, **A30-11** was still fitted out as a Wireless Air Gunner Flying classroom and needed conversion to transport/ambulance specifications by ANA (Australian National Airways), where it was sent later that month.

A30-14 in early 1942, with 1941 RAAF Roundels, with Yellow/Blue/White and Red:
Source Kevin O'Reilly; ADF-Serials.com.au

May 1942 saw **A30-12** arrived unmodified, ex Parkes NSW, with **A30-10** allotted and delivered by month's end. With an establishment of five DC-2 aircraft, one was usually away being converted. In June 1942 on receipt of A30-11 back from its conversion at ANA, **A30-14** was sent to ANA.

This saw the move to Essendon from Laverton due to the improved access to its transport hub and its associated DAT counterpart, 22nd Troop Carrier Squadron USAAF (22nd TCS).[170]

A30-6, at rest after suffering an undercarriage collapse at Townsville in September 1942. Source: RAAFWA

By the end of September 1942, the DC-2 establishment had been increased to seven aircraft for "A" Flight, when DC-2's **A30-6** and **A30-9** were allotted and received in August 1942 and **A30-5** received in September 1942.

Another types, such as one DH84 (**A34-3**), one DH86 (**A31-2**) one DH-89 (**A33-3**), Beechcraft 17(**A39-3,** though issued off Sept 1942), and DH-82A **A17-604**, were also placed on establishment strength during this period in "B" flight.

During the same period, the 22nd TCS USAAF moved to Townsville. Under the new Establishment HD75C, on the 13th November 1942, the squadron would reform on a single type, albeit different models.

No 36 Squadron would move to Townsville in December 1942 as well and, leveraging on the increase of C-47/C-47As being sent over from the USA ,by getting the USAAF's older cast-offs.

From January 1943 saw Loaned USAAF Douglas Transports, C-53s **41-20070** VHCWA, and **41-20053** VHCCB, and Douglas C-50s **41-7698** VHCDJ and **41-7697** VHCDK, being added to the squadron's In-use establishment.

Also the first RAAF Contract C-47[171], **A30-15**[172] VHCTA arrived on the 16th February 1943, followed by **A30-16** VHCTB on the following day.

One of four C-53s delivered on the SS Polk in January 1942[173], pictured here is C-53 41-20053 at Amberley RAAF Station, with an USAAF P-40E in background. She made several trips to Darwin and Java during this time. Source: RAAFWA

By July 1943, **three DC-2s** (**A30-9/11/12**) remained on strength, with **six C-47s (A65-1/3/4/5/8/14**).

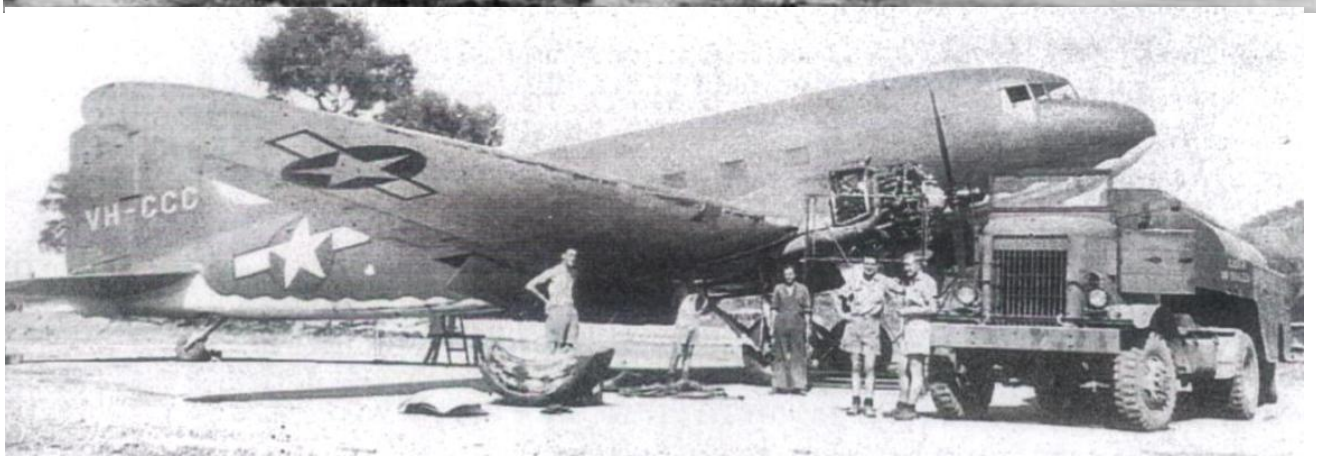
Additionally on loan from the USAAF, Douglas Aircraft**; five C-49's VHCXL(41-7689),VHCDB(41-7687), VHCDC(41-7690), VHCDD (41-7691) and VHCDE(41-7693)**, **two C-50's VHCDJ(41-7698) and VHCDK(41-7697), three C-53's VHCCB(41-20053), VHCCC (41-20054)** and **VHCWA (41-20070),** along with three **C-60 Loadstars, VHCED(42-32173), VHCEE (42-32174) and VHCEJ (42-32178).**

*As mentioned, operational control was under the Allied Directorate Air Transport, with services ranging far in SWPac, North Eastern and North Western Areas. The DC-2's, whilst still wearing No 36Sqn RAAF's Codes, (**RE-K/RE-B** and **RE-A** respectively) were usually attached to the Parachute Training School.*

This it seems by the beginning of August 1943, made No 36 Squadron RAAF, the largest RAAF Transport Squadron during the war, with some twenty-five aircraft held on strength.

Inclusive to the twins, they also had a USAAF DH-82A Tiger Moth **#964** on loan, DH-82A Tiger Moth **A17-604** and Fairchild **A36-3** held for communications and liaisons use.

The three mentioned DC-2s, A30-11 (RE-A), A30-12 (RE-B) and A30-9 (RE-K) seen here dropping Parachutists in 1943. Source RAAFWA.



C-50 VHCDJ (41-7698) "Waltzing Matilda" later with Guinea Airways and C-53 VHCCC (41-20054) seen here at Garbutt in July 1943. Source RAAFWA

In retrospect for a comparison of this now large squadron, having only some nine months prior as one of the four embolic RAAF Land Transport Squadrons strengths on the 28th September 1942, had only fourteen aircraft of various types.

In total, the September 1942 RAAF Transport Fleet had at that snapshot of time some eighty-five pilots and thirty seven land based aircraft in service within its four transports Squadrons:

- No 33 Squadron (B Flight): one DH84, six DH82 Tiger Moths, one Miles Falcon and four Ansons (Based in Port Moresby)
- No 34 Squadron three Ansons and six DH82 Tiger Moths
- No 35 Squadron one Fox Moth and one Moth Minor (Based at Pearce)
- No 36 Squadron seven DC2s, two DH86s, two DH34s, one Fairchild 24, one Tiger Moth and a DH89 on loan.

Lockheed Hudsons and Lodestars

All large twin aircraft of the RAAF at sometime, (IE: Anson, Catalina, Beaufort), in normal squadron service had the capacity to carry some freight, equipment spares or VIP or Ground crews, pending fitting through their doors and not maxing out the maximum take-off weight of the aircraft from one location to another on deployment, evacuation or during ferrying.

In hindsight, at the beginning of May 1942, there was only a requirement for seventeen transports for the whole RAAF. The USAAF at this time had in summary, only nineteen transports in April 1942, with a high percentage of that total made up of ex NEI/KLM Refugee aircraft.

With the developing of this mobile use of land and sea transports in SWPac, this resulted in an operational Requirement for Land Transports reflected by Overseas Indent's 927 and 2028A which had a accumulative total requirement of ninety transports (for nine Squadrons).

However, only thirty –two such C-47s were delivered or on allotment under these Overseas Indents (thirty under the former and zero under the latter) by May 1943, some twelve months after their request. *Another ninety-three were delivered eventually under Overseas Indent 2272A (one lost in transit), 2415 and 2456 (twenty-one cancelled) by August 1945.*

The new operational requirement of 1942 was "Mobility" of the Air Force, meaning the ability to deploy a force in theatre from the Australian Mainland with initial ground crews, ground equipment, armament and fuel to support operational squadrons, followed up by more traditional methods of support(Road/Train/Shipping).

With only four C-47s promised and subsequently to be delivered by early 1943, the target of four operational Transport Squadrons must have seen as a distant hope given the priorities of other theatres. These four Squadrons was part of the additional fifteen Squadrons (Including three fighter and three bomber Squadrons)on top of the existing thirty-Squadron Force in light of the number of proposed Squadrons in the RAAF, to forty-five by December 1943.

This included establishing a light transport squadron by ordering some ten C-60 Lockheed Loadstars, in January 1943 under Case 200 Indent 2047A, of which six were to be in use, three immediate reserve aircraft and one as a twelve monthly attrition replacement.

The first example of a RAAF Mobile Transport Force would be, following a direct order to provide a "Hudson Squadron" by the Air Board, was for No 1 OTU located at Bairnsdale VIC, to gather up all of its air worthy Hudson Mk1/MkIV Bombers of the Unit, for a Special Duties Role in SWPac theatre on the 10th December 1942. *It must be remembered that following the crash of Hudson Mk1* ***A16-38*** *following a wing spar failure in October 1942, that some ten Hudson Mk1s of this unit required main plane changes before this order following the discovery of cracks in main plane spars. The Unit was also, it must be noted, responsible for Beaufort Conversion as well.*

The Unit, named ***No 1 OTU Detachment Flight***, consisting of fifteen Hudsons (Mk1s and MKIVs) was deployed north some sixteen hours after the order (Flights of six/six and three[174]). However, two were involved in a collision at Parkes NSW on landing (**A16-46** and **A16-110** damaged wing tips), and a further one damaged (**A16-114**) when it was

struck by a USAAF C-56 (**VHCAJ**) at Archerfield QLD the following day. The two Parkes aircraft would rejoin the Unit after parts were sourced at Wagga with 5AD, and transported to Parkes to affect repairs.

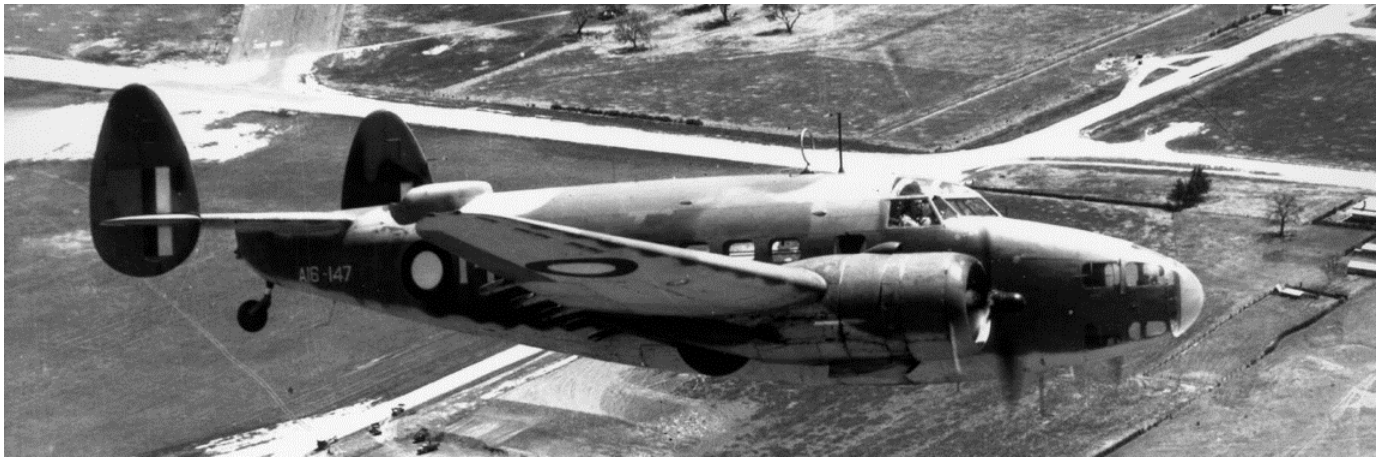
C-56 VHCAJ at Port Moresby

The twelve Hudsons arrived at Port Moresby (Wards and Bomana Strips) by the 12th December 1942, and would used as transport during the Buna-Gona Campaign for the next few weeks with the subsequent operational loss of two aircraft and four crew members (**A16-36** and **A16-127**).

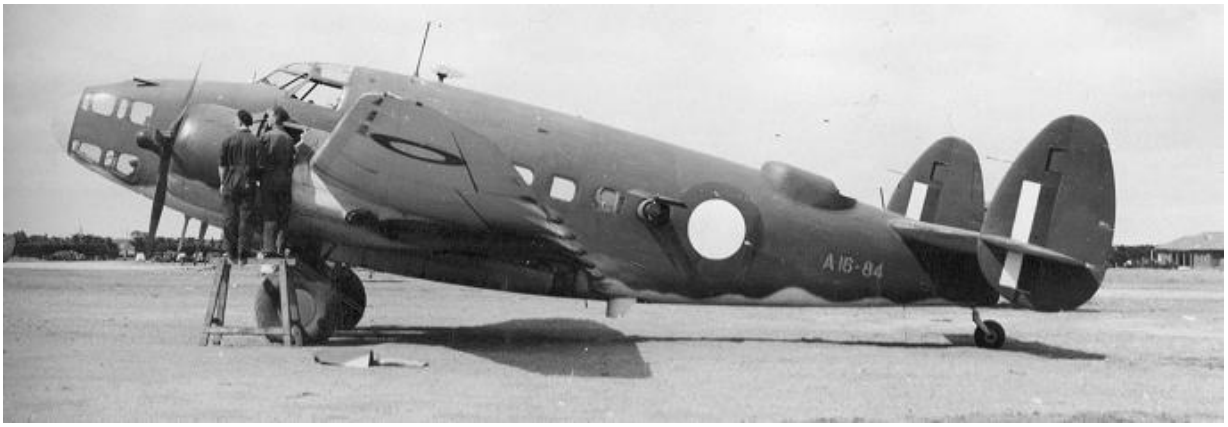
After several weeks of operations, the Detachment Flight was ordered to return to Australia on the 11th January 1943. Remaining No 1 OTU Detachment Flight eleven aircraft were flown back to Bairnsdale, Vic, where they joined the remaining five Hudsons on strength. *They had completed some Six hundred and forty-five flights (totalling some one thousand and seventy hours)over the Owen Stanley Range, carrying 1107 Troops and one million, five hundred and fifty-seven thousand, three hundred and eighteen pounds of freight.*

Following the example and use of No 1OTU Hudsons for transport duties, it was decided in the following months that ten surplus Lockheed Hudson Mk IV airframes would be suitably modified to C-63 standard, and placed in service with Communications flights and later a Light Transport Squadron formed, No 38 Squadron RAAF. [175]

Meanwhile on the Munitions Armament Commission (Air) advice, good news was finally received. Two “five” Aircraft Allocations had been made in June 1943 under Diversion 421 Aus#16 (to be delivered between 26/08/1943-02/09/1943) and Diversion 576 Aus#28 under Special Project#51591 (to be delivered between 29/11/43 to 11/01/1944).



A16-147 modified to C-63 standard, serving as “M” with No 4 Communication Unit in November 1943. Bath tub refitted, in lieu of Bristol Turret. Later coded as PK-K, it would serve in No 38 Squadron RAAF.

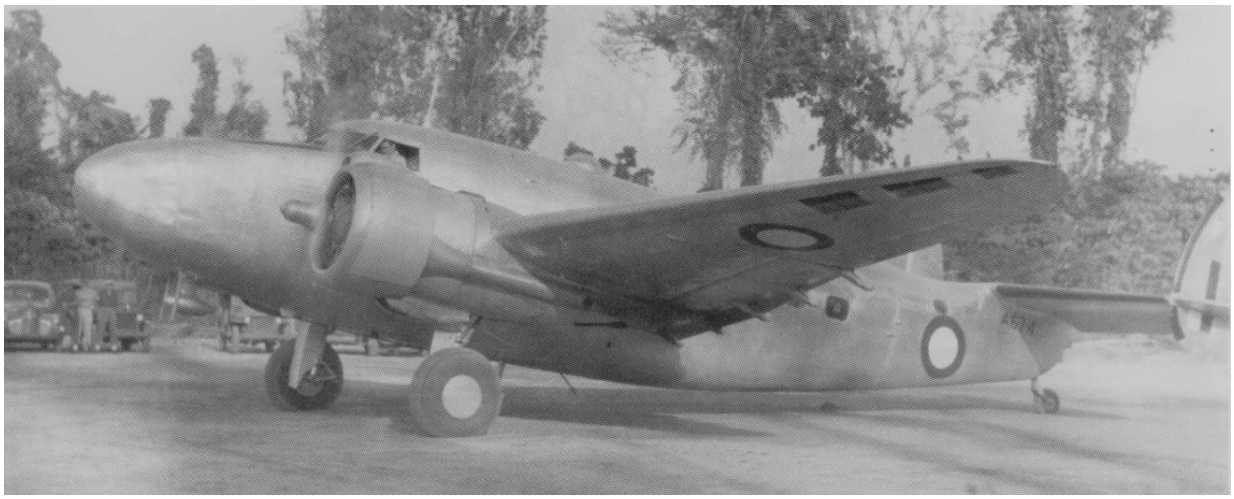


A16-84 was later used by No 4 Communication Unit in November 1943.Pictured here with the Station Flight at Laverton as a Target Tower

Other Hudsons, A16-98 as above, had been used by No 1 Communications Unit as a VIP Transport from January 1943 to December 1943 fitted with seven airline style seats. Pictured here transporting the then Chief of Air Staff (RAAF), AVM Jones to Batchelor NT. The Bath Tub had been covered over by streamlined sheeting.

Given the RAAF Stores Number A67-*, they would be issued to No 37 Squadron RAAF from late 1943/early 1944, by which time, all four of the original Transport Squadrons had already or were in the process of converting over to the C-47/C-47A Transport Aircraft.

The Lodestar aircraft were originally ordered for communications use, and would revert to that use in 1945 when sufficient C-47s were on hand to re-equip No 38 Squadron RAAF.



Lockheed Loadstar A67-4, now stripped of camouflage, runs up.

The Heavy Transport Requirement: 1943-1944

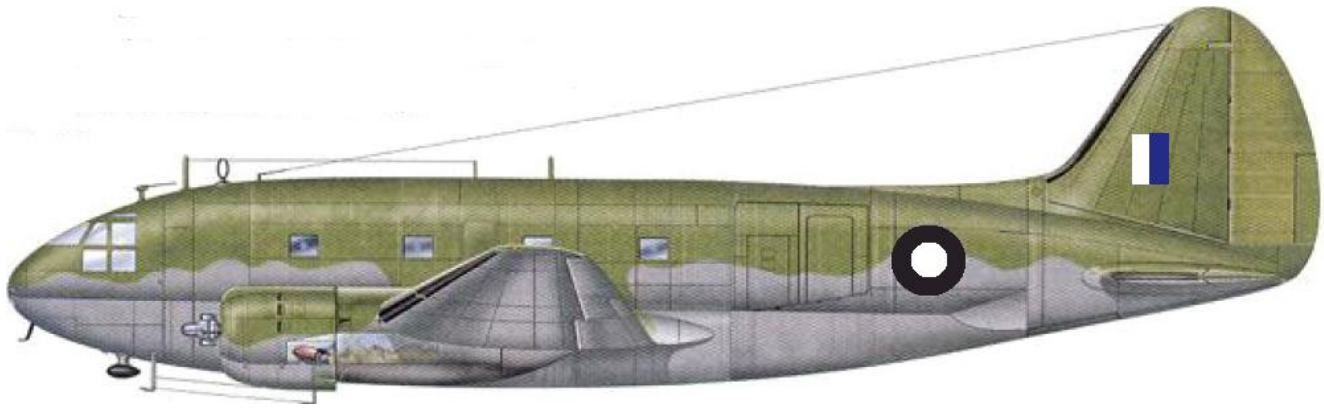
A June 1943 requirement for twelve Transport (Type: Heavy Twin Engines), specified as Curtiss Wright C-46, was requested via the Munitions Advisory Commission (Air) to equip one Transport Squadron from November 1943.

Ten C-46 aircraft (nine on unit establishment and one attrition replacement) were to be delivered in three aircraft batches from August to October 1943, with the attrition replacement being delivered in December 1943.

Deliveries of follow-on orders would be at an increased rate of nine aircraft per month (Re-equipping or converting a squadron each month) from January 1944, to ten, twelve and fourteen in total to the month of May 1944, then reducing to five for June (equipping the last squadron to form) and July 1944, to a final two to three to be delivered in August 1944 to complete the original allotment/order.

Bidding for an additional six attrition aircraft was thought prudent, to take the total to seventy-two C-46 aircraft to include the following six months thereafter. The eventual requirement would be for a total of five Transport (Heavy) squadrons equipped with the type (a UE total of forty-five C-46 aircraft), by July 1944, with a Unit Establishment of nine aircraft each, along with an additional twenty-seven in service reserve aircraft ordered

Some seventy-two C-46s to be inducted in total into the RAAF Transport (Heavy) Squadrons, with a further "wastage for twelve months" figure of twenty-two C-46 aircraft, per an expected a twenty percent attrition rate for frontline aircraft. A total of ninety-four C-46 aircraft was the requirement for the RAAF for 1943 and up to mid 1945.



However, due to competing Heavy Transport requirements elsewhere in other theatres, (China Burma and India, and the UK for D-Day) an allotment through bids was not successful.

The US War Department offered, in lieu of these much needed USAAF heavy transports, another design from the same stable; ***The Curtiss Wright CW-27*** in mid 1943.

It offered a swing nose for ease of loading, a wide box like fuselage and the same power train of the C-47, then coming into RAAF service in 1943, with a possible local production out of non-strategic materials available in Australia to fulfil both RAAF and USAAF in theatre.

The location for manufacture was to be Brisbane with a total of twenty-four C-76 Aircraft, Pratt and Whitney R-1830-92 Twin Wasp engines substituted by Commonwealth held Wright Cyclone 14 Engines, would be produced in the first two years. The project would have required one thousand personnel (including three hundred tradesmen) with aircraft not becoming available until early 1944.

The initial contract was for five C-76 prototype aircraft. Further orders for eleven YC-76 pre-production aircraft and nine revised YC-76A improved evaluation aircraft were placed by the US Army. The prototype YC-76 first flew on 1st May, 1943.

On 10th May 1943, the first YC-76 constructed at the Louisville, Kentucky plant, **FY43-86918**, lost its tail unit at 17:29hrs *due to lack of "forgotten" securing bolts not fitted on the production line,* whilst on a test flight, causing it to crash at Okolona, Kentucky, killing the three Curtiss Wright test crew, (Pilot Edward Schubinger, Co-pilot John L. "Duke" Trowbridge, and Engineer Robert G. Scudder.)

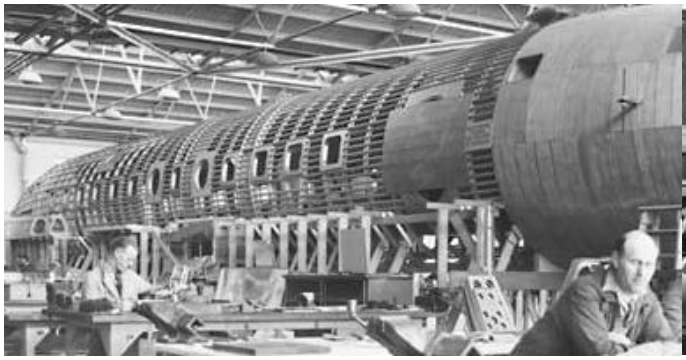
Due to its revealed shortcomings on so many levels, the United State Army decided to cancel the whole concept and contract.

The GAF Tudor

A further decision in 1944 saw the opportunity to incorporate in the production run for an Australianised and built Lancaster Mk IV (Later known as Lincoln Mk30 to be built at a rate of fifteen aircraft per month), an order for twelve Heavy Transports based on the Tudor II design.

An order for sixty one GAF Lincoln MK30s was eventually stated for post war use, with an additional twelve GAF Tudor IIs to be built. The first GAF Lincoln Mk30, A73-1, flew in January 1946.

The Tudor II, was a transport (and future commercial passenger) version of the Lincoln Bomber, utilising many design parts (Wing, engines, and systems), militarised in GAF production with a large cargo door so it could be used as a heavy transport for the RAAF, with RAAF Stores Number A74-*. Development continued up to making a wooden mock-up at GAF (Below).



In the end, the RAAF never got its heavy Transport aircraft into service, with the final twelve contracted aircraft being built as long nose Maritime Reconnaissance Lincoln Mk31s from 1951.

The Civil Side

In parallel with these orders, it should be noted that the Australian Civil Aviation Transport Fleet, heavily utilised by both the Australian Government and by DAT on services within the Australian Continent, had by this time reduced in size through wear and attrition. No new aircraft had been imported onto the Australian Register.

A total of thirty-three aircraft were in use in June 1943. They included only twelve aircraft above fifteen thousand pounds: two DC-3 and four DC-2 operated by ANA; three Empire Flying Boats operated by QANTAS, and two Lockheed 14s (one owned by W R Carpenter on charter to ANA, and one owned by Guinea Airways).

These thirty-three aircraft had flown 7,000,000 miles carrying 137,000 passengers and 1,000 tons of freight in the preceding twelve months alone.

With an original late 1942 request to release second hand or new production eighteen C-47 types for the Australian Civil Airline Fleet despite numerous requests through General MacArthur had been unsuccessful.

Eventually in 1944 numerous ex USAAF Transports (Including those C-49s and C-60s by No 36 Squadron RAAF) would find their way, after refurbishment, in service with them.

The Light Transports:

DH-34A Dragon

Prior to the commencement of the Pacific War, de Havilland Australia received an order for the manufacture of eighty-seven DH-84A light twin engine transport aircraft, with Gypsy Major Mk1 Series 2 engines built by General Motors Holden's Melbourne Plant, with the RAAF Stores number A34-13 to A34-98.

The preceding A34-1 to 12 aircraft were civilian impressed aircraft from 1940 to 1942.

Originally eleven aircraft were to be built for Wireless Air Gunner's school roles. Three flights each with an In-use Establishment of two aircraft, with an Immediate Reserve of one aircraft, totalling nine aircraft. Also, for wastage, a further two aircraft, making eleven in total.

Another thirty built specifically for two Air Observer/Navigation/Signals Training Units, each with ten In-use Establishment aircraft, along with five immediate reserve aircraft and a further two aircraft for wastage.

That would leave some forty aircraft remaining of the eighty-seven aircraft order to be used in communication or transport squadrons.

The first aircraft was test flown during September 1942, with series production commencing the following month De Havilland craftsmen began production of the first Australian made Dragon in August 1942 in the storage area of the Grace Brothers department store on Broadway in Sydney CBD.

The partially completed aircraft (A34-13) was moved to the De Havilland factory at Mascot and completed on 25th September 1942. The aircraft was test flown at Mascot on 29th September 1942 then painted in camouflaged upper surfaces and pale fuselage sides and under surfaces. Production was completed by June 1943.

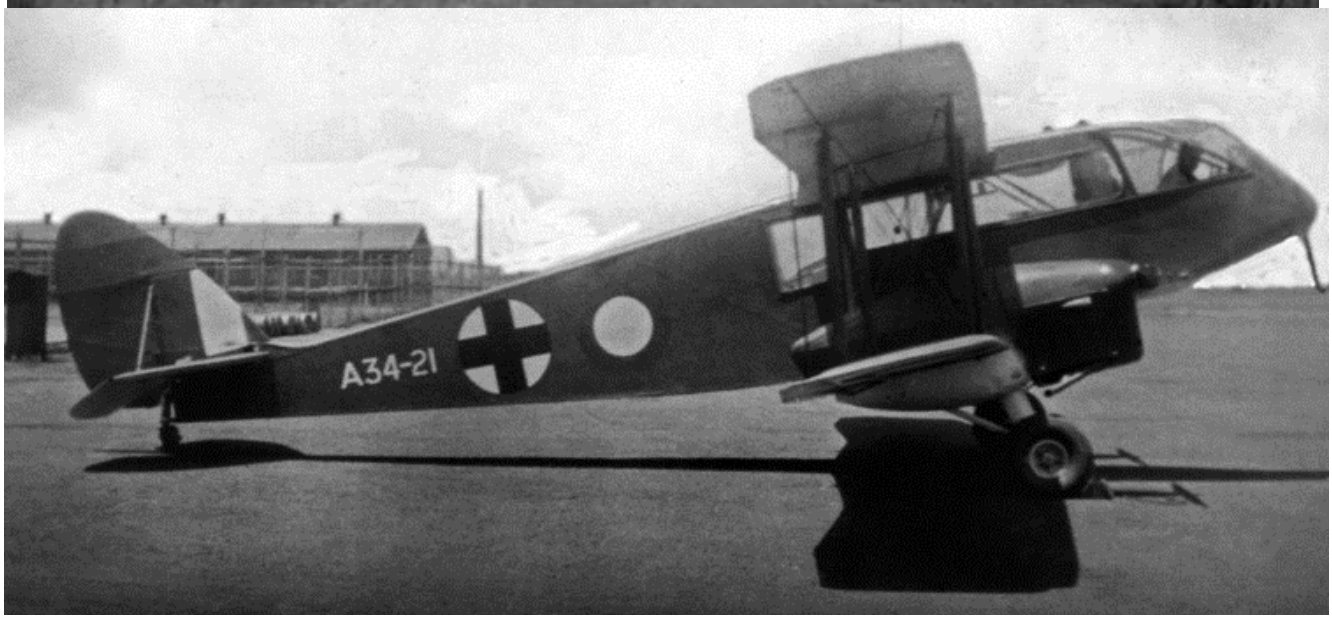
Forty-two of these were built as transports and initially served in the first four transport Squadrons in small numbers as production was slow at first. Several were also modified as Parachute training aircraft.

A further four were built and fitted out as Aerial Ambulances (A34-21)/22/A34-30 and A34-34).
Initially for No 2 Air Ambulance, with an In-use Establishment of three aircraft and one immediate reserve, more would be converted by the RAAF later for inclusion in Communication Units.

Originally eleven aircraft were to be built for Wireless Air Gunner's school roles. Three flights each with an In-use Establishment of two aircraft, with an Immediate Reserve of one aircraft, totalling nine aircraft. Also, for wastage, a further two aircraft, making eleven in total.

Another thirty built specifically for two Air Observer Training Units, each with ten In-use Establishment aircraft, along with five immediate reserve aircraft and a further two aircraft for wastage, for No 1 and No 2 Air Observers School.

That would leave some forty aircraft remaining of the eighty-seven aircraft order to be used in communication or transport roles.



Of these forty aircraft, a quantity were issued to Transport Squadrons, the Parachute Training Unit, and Communications Flights, carried DAT Radio Call signs on fuselages alongside other de Havilland products .

DH84A Dragon Transport Aircraft in Transport Squadrons 1943 examples: A34-5/VHCSB, A34-11/VHCSC, A34-23/VHCSF, A34-26/VHCSG, A34-31/VHCSH, A34-33/VHCRM, A34-37/VHCRN, A34-38/VHCSJ, A34-39/VHCRO, A34-44/VHCSK, A34-45/VHCSL, A34-48/VHCSM and A34-47/VHCSN.

A34-35 shown preparing to move bivouac gear after Indigenous Australians carried them to the aircraft in North West Australia

Top, mid 1943, A34-55 Coded BK-D with No 35 Squadron RAAF based at Maylands WA. Ex-civilian twin engine DH-89 Dragon Rapide, A33-3, on below above, carried VHCRP when with No 36 Squadron RAAF.

UC-64A

Ordered in August 1943, Fourteen Norseman UC-64A's under Overseas Indent 2227A, under Case 200, Diversions #501(four aircraft), #598 (five aircraft), and #650 (five aircraft) with the RAAF Stores Number, A71-* allotted, were delivered to Australia from the 22nd September 1943 to the 24th January 1944

A71-10 with APU on arrival

A71-4 with No 5 Communications Unit, coded as KF-B

The RAAF received all 14 of the 10-seat Norseman UC-64As with the RAAF Stores numbers A71-1 to A71-14 by January 1944 and they served with Nos 1, 2, 4, 5 and 7 Communications Units at Essendon, Mascot, Archerfield, Garbutt and Pearce airfields respectively from 1943 thru 1946.

A Communications Unit as of a Snapshot of July 1943

Using Number 5 Communications Unit as an example of what other similar unit's establishment were at this time. Based at Garbutt, Townsville, its roll was to provide communications, passenger, courier, VIP, mail, ambulance, light freight, urgent parts for U/S planes on route, and search and rescue etcetera from Horn Island down to Rockhampton, west to Cloncurry.

We note that a total of five types were on charge, all used for the above mentioned variety of missions:

- Three DH-82A Tiger Moths: **A17-684/KF-Z, A17-483/KF-Y,A17-484/KF-X**
- Seven DH-84A Dragons: **A34-82 /KF-H**, **A34-78/KF-P, A34-84/KF-Q, A34-28/KF-N, A34-50/KF-O, A34-25/KF-M, A34-80/KF-R and A34-83/KF-S**
- One Anson: **DJ447/KF-L**
- One Oxford: **BF976**/Carried DAT Radio Call Sign: **VH-COA/KF-W**
- One Walrus: **W2705/KF-A**

A34-82 coded KF*H with No 5 Communications Unit based at Garbutt July 1943.

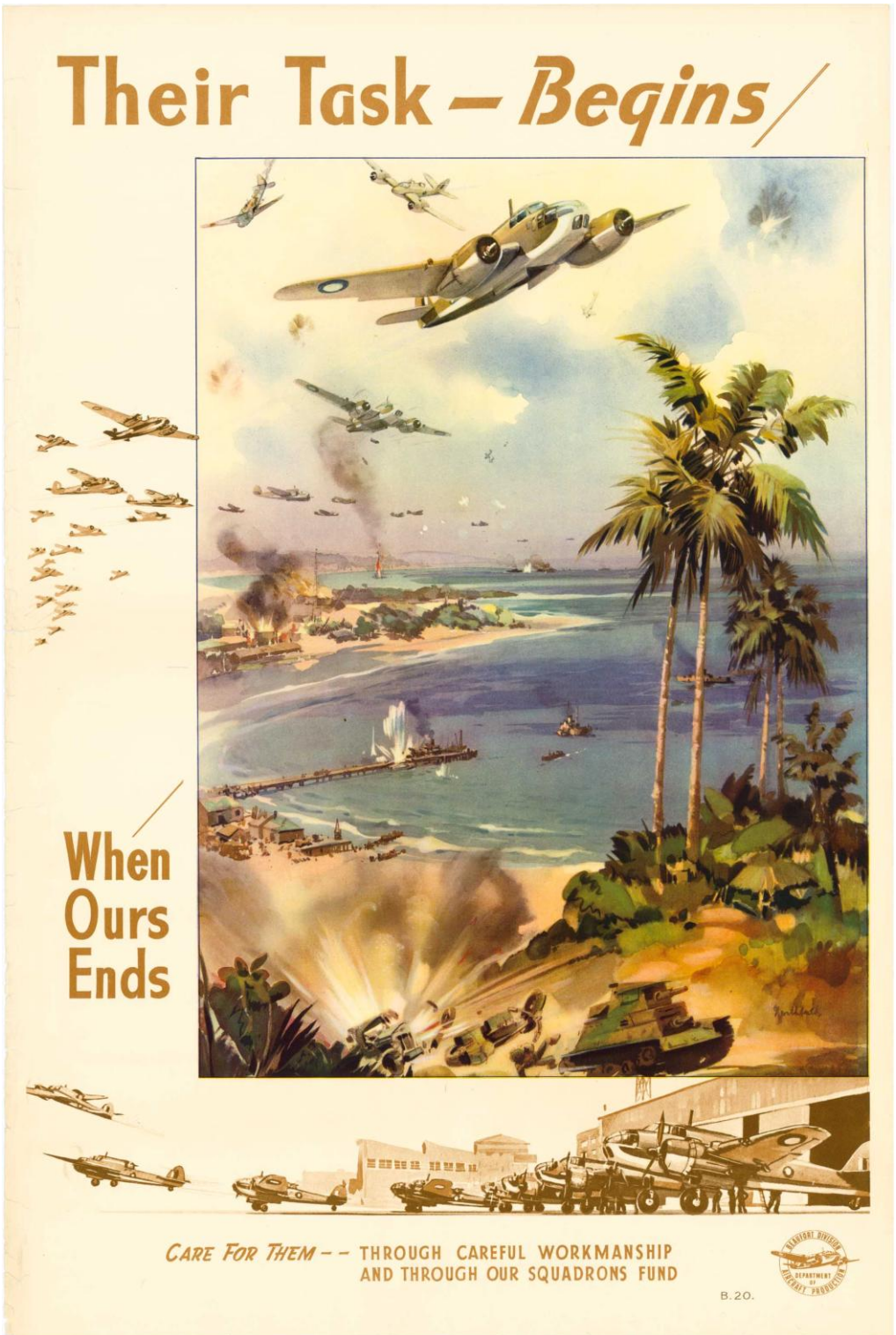
Next: Part 5 will be The RAAF; 1944 to 1945
Sources:

Title: RAAF Unit History sheets (Form A50) [Operations Record Book - Forms A50 and A51] Number 33 Squadron Mar 42 - Feb 46 Contents range1942 – 1946 Series number A9186 Control symbol 63 Access status Open Barcode 1358952 NAA

Title: RAAF Unit History sheets (Form A50) [Operations Record Book - Forms A50 and A51] Operation Training Units 1 to 4 Dec 41 - Apr 44 Contents date range 1941 – 1944 Series Number A9186 Open barcode 1360090 NAA

Title: Aircraft Assignments - (1943) - to RAAF from Overseas (Operational Aircraft) Part II Contents range1942 – 1943 Series number A1196 Control symbol1/501/466 PART 2 Barcode199084

Data Files Gordon R Birkett: A16/A59/A30/A65



Truscott's bail out Gordon R Birkett@2018

Early in World War II Lord Beaverbrook originated the idea of the "Presentation" aircraft.

An individual, organisation or town could present the cost of an airframe (for a Spitfire this was set at £ 5 000 although the real cost was nearer £ 12 000!) and an aircraft would be allocated to bear the name of the donor (or any caption they chose instead) in (officially) four inch high yellow characters on the fuselage.

So throughout the Second World War, cities, towns, boroughs, companies, organisations and even individuals patriotically raised funds to purchase aircraft for the hard-pressed Royal Air Force. More Supermarine Spitfires - at least 3,000 in all - were funded in this way than any other aircraft type and at that time the nominal cost of each was £5,000.

Each donated aircraft bore a name suggested by its donor, usually marked in yellow characters on the engine cowling. Some of the names were rather odd-ball. A Spitfire named "Dorothy" was bought as a result of subscriptions from women all over Britain who bore that name; another, "The Dogfighter", was - appropriately enough - a gift from the Kennel Club! The official style was not always adhered to, however.[176]

In fact a further one, **AB994** was named: **"Gingerbread"** with a Ginger Haired RAAF F/Lt in attendance,, F/Lt Keith "Bluey" Truscott of 452 Sqn RAAF. It was later used by 457 Sqn RAAF whereupon on the 4th April 1942, Sgt Arthur Bowell Burgess Serv#402726 failed to return from escort operations near St Omer.[177]

'The Staffordian'

When the Mayor of Stafford launched the Stafford and District Spitfire Fund in August 1940, announcing in the Staffordshire Advertiser that, '£5,000 is required to purchase one of these machines and I am confident that this amount will be very quickly raised in the district', BRC managing director, Mr Butler, pledged that the firm would also contribute £10,000 for a further two presentation Spitfires, if the town met its target.

The money flowed in, with even the Luftwaffe inadvertently making their own contribution to the fund with £343 raised from people paying a shilling to see the remains of a German bomber on display in the meat market.

In October 1940, Lord Beaverbrook wrote to the Mayor to, 'thank the people of Stafford and District for their magnificent contribution to the strength of the Royal Air Force, which is a noble tribute to our airmen'.

Two Spitfire VBs, **R7229** and **R7263**, were given the names **B.R.C Stafford I** and **B.R.C Stafford II** respectively. A third Spitfire, **AB842**, was called **'The Staffordian' in** honour of the district.

It was delivered ex factory to 38 Maintenance Unit (RAF) on the 5th July 1941 and delivered to No 452 Squadron (RAAF) on the 5th August 1941, where it carried the squadron code of **UD-U**.

'The Staffordian' last operational Sortie

On the 8th November 1941, No 452 Squadron RAF (RAAF) joined the Kenley Wing on Circus 110 to provide top cover for RAF Blenheim Bombers attacking the Lille Railway Workshops.

At an altitude of 26000 feet, the Squadron orbited several times over the channel and then crossed the French coast east of Dunkirk.

On the way out, the wing was attacked by sixty plus BF-109Fs and FW190As some five miles south east of Dunkirk and seaward of Calais, France. Coming in from the starboard Green section of B Flight, the enemy committed to their attack.

Green Section Leader, F/Lt Keith Truscott (Green 1), immediately pulled hard into a right and turn and made a beam attack on the first BF-109F from 50 yards. He saw one 20mm shell hit the engine and then another hit the vicinity of the cockpit of the aircraft.

The aircraft was seen to explode and went down vertically leaving a trail of black smoke. Green 1 then did a diving turn and witnessed the aircraft crash into the ground (as did F/Lt Thorold-Smith, Red 1, Spitfire **W3821 UD-D**). During the next minutes of combat he engaged a further three aircraft without effect.

Just after leaving the coast as the most rear most aircraft in the formation, he witnessed two enemy aircraft attack a section of two Spitfires. He immediately radioed the two Spitfires and then attacked.

They both broke to starboard, and Green 1 did a tight dive down to 8000 feet and attached himself on the second enemy aircraft and opened up with a slight deflection and closed dead astern to deliver a five second burst.

The whole tail section was seen to blow off and he went over and down vertically. (An enemy aircraft was witnessed going down at this time by P/O Lewis (Yellow 1, Spitfire **AB992**) and P/O Sly (Green 2, Spitfire **AB966**)

His own aircraft, Spitfire VB AB842, shuddered and he could see bursts on his starboard wing. He was under attack by another enemy aircraft. He then pulled away to the left and dived to the deck.

As Green 1 approached the English coast at sea level, his fuel supply was diminishing rapidly which forced him to climb to 3000 feet. At this height his fore and aft control of his aircraft failed, causing his aircraft to dive. This forced him to bail-out, which he did successfully, 10 miles east of Ramsgate.

After spending an hour and a quarter in the channel, he was picked up by an Air Sea Rescue (ASR) Boat. (*A second pilot, Sgt Dunstan also bailed out of P8645 and was picked up by ASR Boat*)

The result of this action, two enemy BF-109fs were destroyed by Green 1 of B Flight.

However the squadron had lost two Spitfire Mk VBs by enemy action and a further one was heavily damaged (piloted by Sgt Tantain in **AB781**) when it crashed landed on return at Gravesend. *(AB781 was repaired and after further service with 71Sqn RAF (Eagle Sqn) it was eventually was sent to Russia in March 1943)*

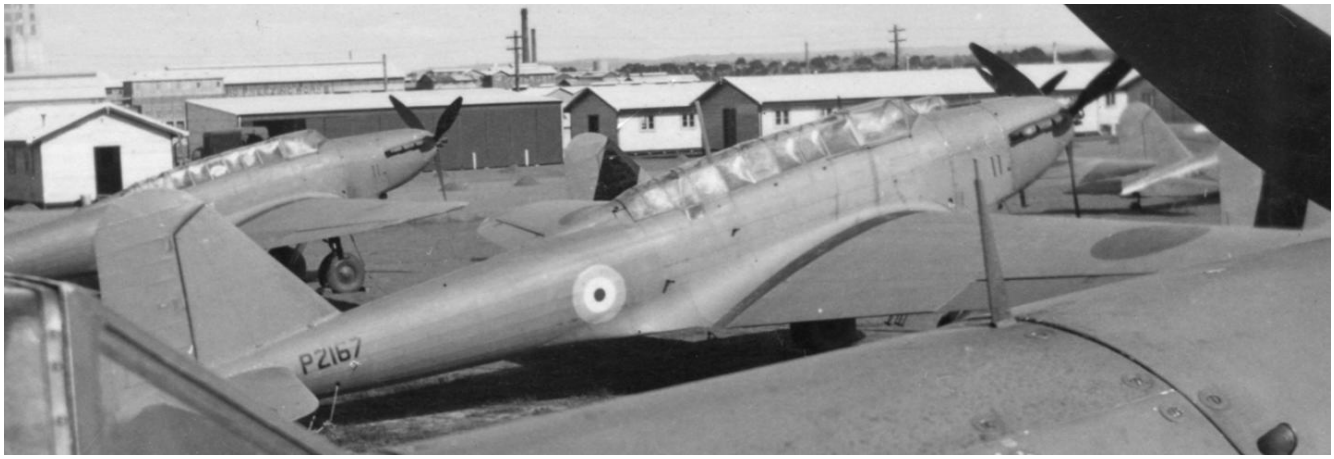
F/Lt Keith Truscott, Sqn Ldr Brendan Paddy Finucane[178], and F/Lt Raymond Thorold-Smith pictured in 1941 at Kirton in Lindsey

Odd Shots: Battle by name, but BAGS by use

This Aircraft, K7581 did not come to Australia, but is the only “actual” colour shot I have of a Battle. Note Type A and B patterns on Gladiators

Battle L5156 would serve its entire career in 1BAGS until May 1944.

L5471 Served briefly with CFS and later all of its remaining service life with 1 BAGS until January 1944.

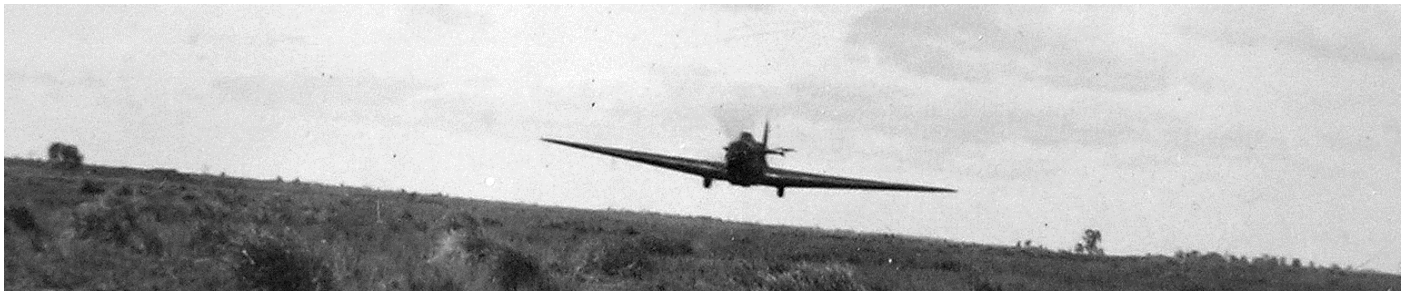


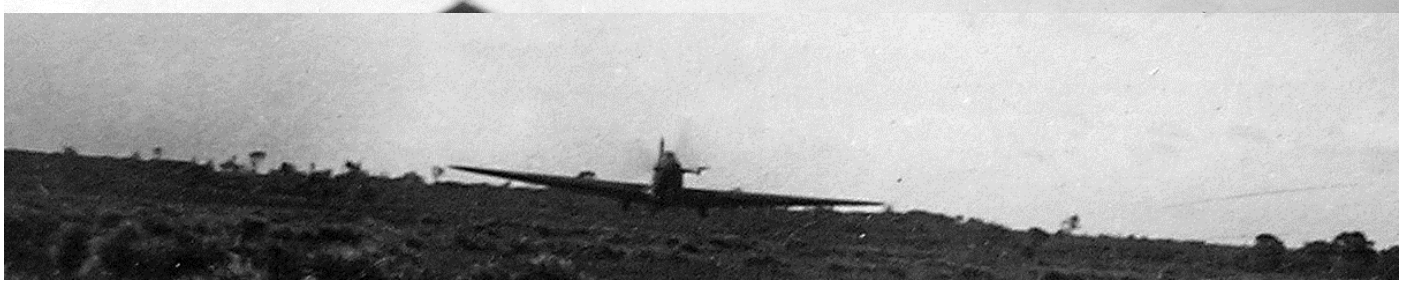
Framed by others at Geelong, P2167 would serve its entire career in 1BAGS until April 1944.

P5242 would serve its entire career in 1BAGS until July 1943.

Pictured middle in this formation during 1938 before coming out to Australia under EATS, Front line Bomber K9324 served with No 218 Sqn RAF. Later it was received December 1940 in Australia and served in 1BAGs until being converted into Instructional Airframe #13 in September 1944.

This Photo is in France, during the winter of 1940, which means K9324 served with No 218 Sqn RAF before being returned to the UK before the fall of France.





Low and fast,..well it was for Battle #57 anyway,..And last pass.... Bit too low !!!

Curtiss Corner: P-40N-5 A29-518

Pictured in flight when coded K-LB on the starboard fuselage, only "K" had the No 84 Squadron RAAF “LB” Markings when this photo was taken near Horn Island , along with E/H/D. *Colouristaion Brendon Scott*

Evidently,...to the keen observer, the reverse photo in a series taken that same day reveals that only “K” has Squadron Code of "LB", though only on Starboard side, and fin flash applied, but not the Code on the port side!!, before this Photo flight.

In echelon..north from Horn Island, over Thursday Island.

Her History: P-40N-5 FY 42-105372 was ordered on USAAF Contract AC34423, RAAF Case 200, Indent 2012A RFDA-322A, Diversion 406-A, Aus15 #16 Shipped Ex Oakland California USA Delivered by sea as MAC Air **A29-1118** whereupon it was received by 3AD Amberley Queensland ex USA 09/09/43. Here it was assembled, tested and renumbered as **A29-518** 09/09/43.

Eventually it would be received by No 84 (F) Sqn RAAF, then based on Horn Island ex 3AD on the 22/10/43. Rec 11RSU ex 84 Sqn RAAF 08/06/44. Rec 11RSU Res Pool ex 11RSU 10/06/44. Rec 78 (F) Sqn RAAF ex 11RSU RP 14/06/44. Rec 11RSU ex 78 Sqn RAAF 26/06/44.

Rec 22RSU ex 11RSU 15/07/44. Rec 78 Sqn RAAF ex 22RSU 16/07/44.

Accident 1000hrs 22/07/44 when the starboard wheel brake jammed on landing when landing at Kamiri Strip , Noemfor Island. The aircraft became uncontrollable and crashed. The pilot, F/O Colin Harold Heard Serv#417637, was not injured. Approved to be Written Off per AMSE File#9/16/1848 on the 27/07/44.

Camo Strokes: WW2 Ground Vehicles issued to RAAF, in 2AIF Army Patterns.

A.R.P.

(Air Raid Precautions)

CAMOUFLAGE COLOURS

They are supplied in FLAT OIL PAINT with a gritty or non-gritty finish as required.

Ready for use by brush or spray, the paint can be applied over almost any surface. Its estimated covering capacity is:—

GRITTY GRADE.

Absorbent surfaces .... 10-15 sq. yds. per gall.
Non-absorbent surfaces . 15-18 sq. yds. per gall.

NON-GRITTY GRADE.

Absorbent surfaces .... 35-40 sq. yds. per gall.
Non-absorbent surfaces . 55-60 sq. yds. per gall.

Packed in 5-gallon drums and 1-gallon tins.

"CAMOUFLAT"

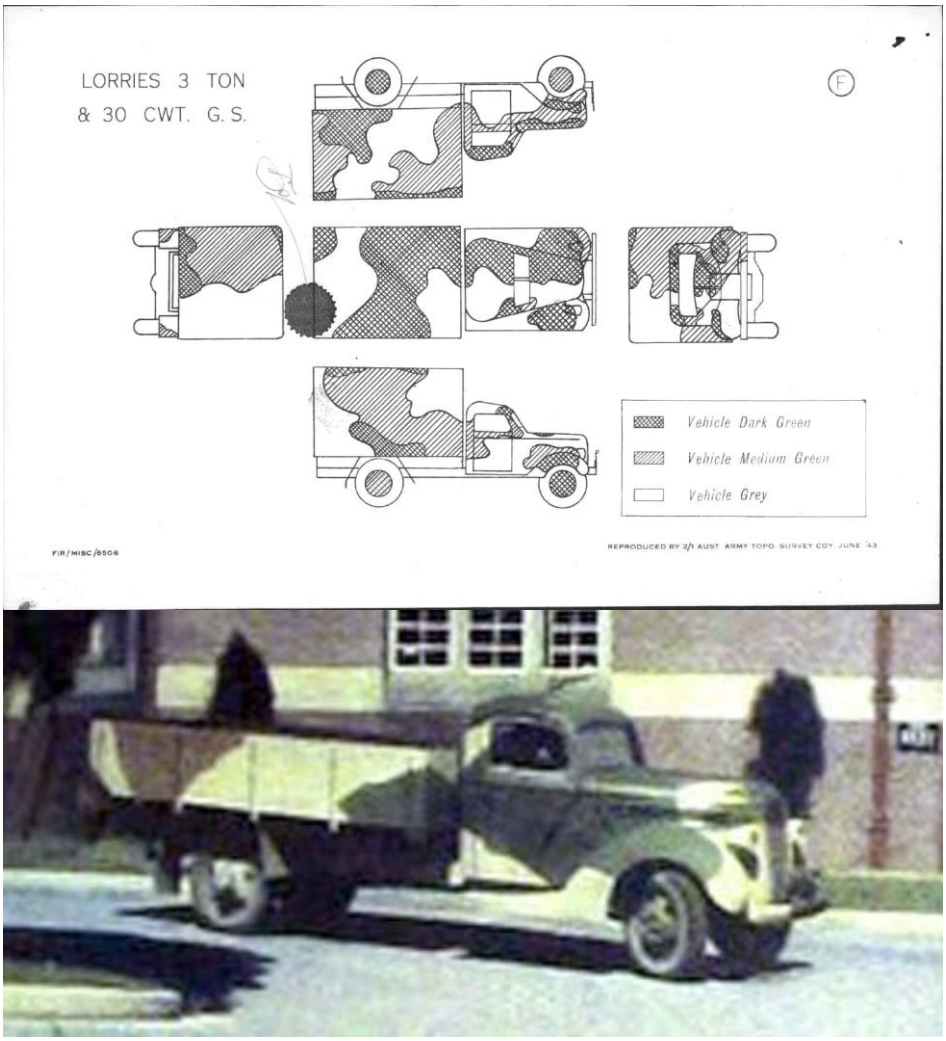
Particularly recommended for Fibrous Asbestos Cement Sheeting and corrugated Asbestos Cement Roofing, "CAMOUFLAT" is a hard-wearing Portland Cement base paint in powder form. Ready for use after mixing with the correct amount of water, it is specially formulated for camouflage work where a high quality, one coat, flat finish is required. The mixed material may be sprayed or brushed with equal success, and must be applied to a virgin surface (previously uncoated) which is dust-free at the time of application. "CAMOUFLAT" is not suitable for metal or glass surfaces. The colour range is that of Standard A.R.P. colours, and the covering power is 400/450 sq. yards per cwt. —one coat.

NOTE.—The above figures for covering capacities are given merely as a guide to the quantity to be ordered for specific jobs, but the quantity actually used will vary according to the character and condition of the surface.

BERGER'S CAMOUFLAGE COLOURS

(B) LIGHT SLATE
(C) SLATE GREY
(D) DARK GREY
(E) PURPLE GREY
(F) GREY GREEN
(H) LIGHT GREEN
X (J) KHAKI GREEN
X (K) FOLIAGE GREEN
(L) SCRUB GREEN
(M) DARK GREEN
X (N) LIGHT STONE
(P) LIGHT BROWN
(Q) DARWIN STONE
X (R) RED
(S) BASALT RED
X (T) DARK EARTH
X (U) NIGHT BLACK

X ALSO SUPPLIED IN WHITE



Editor's Comment:

<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 articles and News items, his advice and contributions: We cracked the 100 page limit.....could have gotten to 143, but decided to reduce the record. LOL

End Notes:

End Notes: RAAF AIRCRAFT MARKINGS SINCE 1950 SQUADRON MARKINGS – PART 9 by John Bennett @2018

[1] The spelling of Fisherman's Bend has always been a point of conjecture – I have chosen to standardise on Derek Buckmaster's spelling in, *CAC Ceres, Australia's Heavyweight Crop-Duster*, Design Bureau, Melbourne, 2017, p.viii.
[2] http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202018%20Winter.pdf
[3] http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202018%20Autumn.pdf
[4] B Hill, *Wirraway to Hornet*, Southern Cross, Melbourne, 1998, p.114. The *Cicada* was designated R-795 (a volume of 795 cu in); the Winjeel had the 450-hp R-985 *Wasp Junior* (985 cu in) which was a smaller version of the R-1340; the Wirraway had the 600-hp P&W R-1340 *Wasp* (1344 cu in), often referred to as the Single Row Wasp (or SRW). Hill, pp.117, 248.
[5] RAAF Air Board Order ABO N.141, of 24 MAR 1952.
[6] Hill, p.115.
[7] N Parnell & C Lynch, *Australian Air Force Since 1911*, Reed, Sydney, 1976, p.166; Hill, p.115.
[8] Hill, p.115.
[9] N Parnell & T Boughton, *Flypast – A Record of Aviation in Australia*, AGPS, Canberra, 1988, p.231.
[10] Hill, p.115.
[11] NAA A4933, Cabinet Committee on Defence Preparation Agendum DPC/33, *Increased Costs of Winjeel Aircraft for RAAF*, by Minister for Air, The Hon William McMahon, cFEB 1954, p.1.
[12] DPC/33, p.2.
[13] S Brogden, *History of Australian Aviation*, Hawthorn Press, Melbourne, 1960, p.170.
[14] Re 'scrambled', 'consecutive', and 'century' serials, see *ADF Serials Telegraph* Vol.5 Issue 3, Spring 2015: http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202015%20Spring%20Vers%20Fin.pdf
[15] http://www.radschool.org.au/Course%20Photos/Pilots/Pilots.htm
[16] NAA CRS A705 40/4/537 (11A), of OCT 1955.
[17] R Frost, *RAAF College and Academy*, RAAF, Canberra, 1991, p.42.
[18] *Units of the RAAF, A Concise History, Vol 8 Training Units*, AGPS, Canberra, 1995, p.39.

[19] A Webber, *CT4 Airtrainer in Service with the RAAF*, List Print, Geelong, 1992, p.22.
[20] http://www.adf-serials.com.au/2a99.htm
[21] Parnell & Boughton, p.312.
[22] Two RAAF courses flew the Macchi only:
http://www.radschool.org.au/Course%20Photos/Pilots/70Pilots.htm
http://www.radschool.org.au/Course%20Photos/Pilots/71Pilots.htm
[23] Webber, p.5.
[24] http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Spring%20.pdf
[25] http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Summer%20.pdf
[26] Winjeel Modification No.52 was carried out under Purchase Order 751229; RAAF E/E.88 A85 aircraft status cards.
[27] E/E.88s for both A85-424 (10-28 APR 1961) and A85-445 (10-21 APR 1961) reference Mod.52 undertaken by "CAC working party" at 1BFTS.
[28] Re dayglo application, see *ADF Serials Telegraph* Vol.7 Issue 5, Summer 2017:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Summer%20.pdf
[29] RAF Air Publication (A.P.) 119A-0601-1D A/L9, MAR 1972, 'Application' para.5.
[30] 3SQN pilots were attached to ground units as FACs near the front line, known as a Mobile Operational Reporting Unit (MORU).
[31] G Odgers, *Air War Against Japan 1943-1945*, AWM, Canberra, 1957, covers the roles of Wirraways and Boomerangs in army cooperation from 1943. 4SQN fought up the spine and north coast of New Guinea, culminating in island-hopping to Borneo and Labuan; 5SQN was similarly employed in Bougainville and New Britain often cooperating with the RNZAF leading Corsair fighters to their targets. The squadrons initially started with **WWI roles of Army Coop** – directing artillery fire, tactical recce, and flare dropping. This extended to attack (strafing and bombing targets) and **developing target marking** for strike aircraft, utilising a variety of methods such as diverting army mortar fire to mark the target, strafing the target with tracer fire ahead of the attackers, and dropping smoke bombs.
[32] C Coulthard-Clark, *The RAAF in Vietnam*, Allen & Unwin, Sydney, 1995, p.282.
[33] G Odgers, *Mission Vietnam*, AGPS, Canberra, 1974, p.153.
[34] AWM 342 TI/242, *Flight Test Report - fitment of Winjeel aircraft A85-445 for forward air control duties*, Aircraft Research & Development Unit (ARDU), Laverton, MAY 1969.
[35] E/E.88 for A85-407, passed from 2OCU to 5OTU, then 4FLT in JUL 1970. E/E.88 for A85-413 from JUN 1969 with 2OCU and ARDU, then Mod.99 in JAN 1970.
[36] 5OTU and 4FLT were both stood up on 1 APR 1970, and it was determined the FACs should be in the dedicated 4FLT, with Sabres/Vampires/Macchis in 5OTU; *Units of the RAAF, A Concise History, Vol 8 Training Units*, p.71.
[37] *Units of the RAAF, A Concise History, Vol 1 Fighter Units*, AGPS, Canberra, 1995, p.144.
[38] E/E.88 for A85-438 records being transferred to 4FLT on 28 APR 1970, after the cancellation of its allocation to 5OTU.
[39] E/E.88 for A85-410, which then served with 4FLT until the early 1980s.
[40] https://en.wikipedia.org/wiki/M18_smoke_grenade
[41] http://www.grubby-fingers-aircraft-illustration.com/PC-9_A23-32_walkaround.html
[42] Unfortunately the E/E.88 status cards are missing from the NAA archives for these four aircraft, but refer to the *adf-serials* database for the Winjeel: http://www.adf-serials.com.au/2a85.htm
[43] The term JTAC became effective in the US on 3 SEP 2003 by the publishing of Joint Publication (JP) 3-09.3 Close Air Support.
[44] P Mason & D Mottram, *Mirage IIIO Colours & Markings*, Mushroom Model Publications, Redbourn UK 2005, printed by Stratus, Poland, 2014, p.73.
[45] *Units of the RAAF, A Concise History, Vol 1 Fighter Units*, p.144.
[46] Parnell & Boughton, p.372.
[47] A85-449 at the RAAF Amberley Aviation Heritage Centre (AAHC) had been gifted to PNG in 1978 for trade training, but has since been acquired for restoration at Amberley. In addition, AAHC also has A85-406 acquired from MAAF Oakey.
[48] *Units of the RAAF, A Concise History, Vol 8 Training Units*: **Engineering School** was formed at Ascot Vale on 1 MAR 1940, and by 1941 had become 1ES; 1ES reformed at Wagga as **Ground Training School (GTS)** 4 MAR 1946 (initially referred to as GTU); renamed as **RAAF Technical College (RTC)** 1 MAY 1950; renamed **RAAF School of Technical Training (RSTT)** on 1 DEC 1952. RTC Det 'A' was formed at Rathmines in 1950, which became part of OTS.
[49] https://recordsearch.naa.gov.au/SearchNRetrieve/Interface/ViewImage.aspx?B=3047492
[50] http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%202016%20Spring.pdf
[51] http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Summer%20.pdf
[52] E/E.88 for A85-438; then in JUL 1964 to 1BFTS, and in APR 1970 to 4FLT as a FAC.
[53] Winjeel A85-404 served on 34(ST)SQN over OCT 1960-JUL 1964, E/E.88 for A85-404.
[54] A85-429 as VH-OPJ was sold in the USA in 2006 as N107PJ and flew in California as A85-429, returned to Australia in 2009 as VH-OPJ; Geoff Goodall's warbird site: http://www.goodall.com.au/warbirds-directory-v6/commonwealth-cac.pdf
[55] For current civil registrations, refer to the CASA website:
https://www.casa.gov.au/aircraft-register/xls?search_api_views_fulltext=&vh=DDA&field_ar_serial=&=Search

End Notes: No 3 SQUADRON A.F.C.PART I – AMATEURS AT A NEW ART by John Bennett

[56] AWM 25 81/24 OB/1837 "Policy in the Air" HQ 1 ANZAC 16/187, early 1917.
[57] O Wright, *How We Invented the Airplane*, Dover, New York, 1953, p.55.
[58] ibid, p.51.
[59] A Imrie, *Pictorial History of the German Army Air Service*, Ian Allan, London, 1971, p.13.
[60] E M Emme, *The Impact of Air Power,* Van Nostrand, Princeton, 1959, p.5.
[61] Sir Walter Raleigh, *The War in the Air,* Vol I, Clarendon Press, Oxford, 1922, p.141.
[62] G Norris, *The Royal Flying Corps*, Muller, London, 1965, p.14.
[63] The RFC comprised separate Military and Naval Wings, and a joint Central Flying School.
[64] Raleigh, p.260.
[65] "Wanted – A Flying Machine For Military Purposes", *RAAF News,* Vol 2 No 4, May 1962.
[66] Military Order 570, of 22 Oct 1912.
[67] F M Cutlack, The Official History of Australia in the War of 1914-1918, Vol VIII, *The Australian Flying Corps*, AWM/UQP, Brisbane, 1984, (first published in 1923), p.xxxvii.
[68] Imrie, p.25.
[69] P R Hare, *The Royal Aircraft Factory,* Putnam, London, 1990, p.46.
[70] Imrie, p.26.
[71] L A Strange, *Recollections of an Airman,* Greenhill, London, 1989, p.102.
[72] Imrie, p.41.
[73] C Shores, N Franks & R Guest, *Above the Trenches*, Grub Street, London, 1990, p.17.
[74] Up until December 1916, pilots arriving in France averaged 15 hours' total flying experience. This was then increased to 22 hours, but reduced again because of the heavy losses of "Bloody" April. M Paris, *Winged Warfare,* Manchester University Press, Manchester, 1992, p.219.
[75] J W Bennett, *Highest Traditions*, AGPS, Canberra, 1995, pp.34-43.
[76] Imrie, p.28.
[77] PRO AIR 10/111, "Handbook of German Military and Naval Aviation (War) 1914-1918", AP No 71, Air Ministry Directorate of Air Intelligence, London, Oct 1918, p.38.
[78] Cutlack, pp.5-6.
[79] H N Wrigley, *The Battle Below*, E G Knox, Sydney, 1935, p.20.
[80] For more details on the confusion over the formation of 67, 68 and 69 Squadrons, see Bennett, *Highest Traditions*, pp.12-13.
[81] M Lax, *One Airman's War, Aircraft Mechanic Joe Bull's Personal Diaries 1916-1919*, Banner Books, Maryborough, 1997, p.174.
[82] B B Halpenny, *Action Stations*, Vol 2, Patrick Stephens, Cambridge, 1981, p.170.
[83] PRO AIR1/2086/207/6/1. Nos 41, 47 and 48 (Reserve) Sqns were at Waddington, and 37 (Reserve) Sqn at Scampton.
[84] AWM 90/0604 PR 90/138, "Training the Military Flyer" in *Flying*, London, 14 Feb 1917, p.87.
[85] The training squadrons were initially known as "Reserve Aeroplane Squadrons", but this was changed to simply "Reserve Squadrons" on 13 January 1916. R Sturtivant, J Hamlin & J J Halley, *RAF Flying Training and Support Units*, Air Britain, Tunbridge Wells, 1997, p.6.
[86] A & A Sloane*, To Fly Like an Eagle*, self-published, Yarrawonga, Vic, 1996, p. 31.
[87] AWM 3DRL/1298, 419/88/3, Les Ross, letter, 4 Jan 1917.
[88] No 1 School had originally been the School of Instruction, changing to No 1 School of Instruction when No 2 formed at Oxford in April 1916, with the titles changing to School of Military Aeronautics in October 1916. Sturtivant, Hamlin & Halley, p.6.
[89] AWM 90/0604 PR 90/138, p.88.
[90] Neil Smith, *No 3 Squadron History*, video by Neil Smith, Sydney, 1990
[91] AWM 3DRL/1298, 419/88/3, Les Ross, letter, 9 Aug 1917.
[92] AWM 3DRL/1298, 419/88/3, Les Ross, letter, 9 Aug 1917.
[93] Sloane, pp. 33-4.
[94] Sloane*,* p.31.
[95] On 22 Feb 1917, AIF headquarters in London advised the British War Office that "the change to No 69 (Austn) Squadron RFC has not been notified to the AIF Headquarters". The British Air Board subsequently decided on 29 Mar 1917 to change the title to No 69 Squadron AFC. AWM 10 4301/10/35.
[96] AWM 3DRL/1298, 419/88/3, Les Ross, letter, 21 Jan 1917.
[97] Seven were selected: 1/AM H F Hughes (Regt. No. 559), 1/AM L H Pretyman (713), 1/AM L H Reid (714), 2/AM T R Barkell (706), 2/AM W C Chivers (775), 2/AM R Hainsworth (601) and 2/AM V E Millington (574).
[98] Those selected were Cpl H C Miller (599), 2/AM S W Ayers (612), 2/AM L Benjamin (522), 2/AM C E Crooke (699), 2/AM S H Harper (625), 2/AM R H McL Paterson (583) and 2/AM F J Scott (739).
[99] A further group of 21 were selected for flying training in July, and this included seven from the wireless section. Two of these were Lee Smith and Les Ross. Lee Smith served on 3 Sqn flying R.E.8s and earning the DFC. Les Ross served on 2 Sqn flying the S.E.5a. After the war in 1919, he was killed in England attempting the first flight from England to Australia.
[100] Douglas Sloane, letter, 18 Mar 1917, Sloane, p.42.
[101] 69 SQN RFC War Diary, Mar 1917, pp 3-4, AWM, Canberra.
[102] Baring, p. 212.
[103] M Paris, *Winged Warfare*, Manchester University Press, Manchester, 1992, p.219. In early 1916, the qualification for pilots was 15 hours solo, and this had been increased in December 1916 to 20 hours solo. H A Jones, *The War in The Air,* Vol III, Clarendon Press, Oxford, 1931, pp.296-7.
[104] AWM 3DRL/1298, 419/88/3, Les Ross, letter, 9 Aug 1917.
[105] H A Jones, *The War in the Air*, Vol II, Clarendon Press, Oxford, 1928, pp.79-80.
[106] Douglas Sloane, letter, 1 Apr 1917, Sloane, p.47.
[107] 69 SQN RFC War Diary, Apr 1917, p 1.
[108] Bennett, *Highest Traditions*, p.17.

[109] E J Richards, *Australian Airmen*, privately published, Melbourne, c 1935, p.8.
[110] Sturtivant, Hamlin & Halley, p.7.
[111] 69 SQN RFC War Diary, Jul 1917, p.1: the 'training machines' were handed on from 69SQN from JUL 1917 as the unit became a 'service squadron'.
[112] 1 A/M Fred Walker, letter, 1 Sep 1917, Sloane, p.96.
[113] Strange, p.158. With improved training techniques, the accident rate had improved by May 1918 to one crash every 60 hours.
[114] Douglas Sloane, letter, 20 Jun 1917, Sloane, p.59.
[115] 69 SQN RFC War Diary, Jul 1917, p.1.
[116] AWM 3DRL/1298, 419/88/3, Les Ross, letters, 10 & 31 Jul 1917.
[117] A3754 photograph from album of Frank Saunders, 23rd Training Wing RFC, South Carlton:
https://www.flickr.com/photos/13150208@N05/albums/72157627846452902/with/6223752892/
[118] L Bridgman & O Stewart, *The Clouds Remember*, Arms and Armour Press, London, 1972, p.26.
[119] Jones, Vol II, p.148.
[120] PRO AIR1/2301/215/1 "Aerial Armament 1914-1918", and AIR1/2301/215/2 "Aircraft Armament".
[121] Baring, p.140.
[122] Hare, *The Royal Aircraft Factory*, p.261. This replaced the earlier Vickers-Challenger mechanism from August 1917, and the gun was further improved by Prideaux links instead of a webbing belt, doubling the Vickers' ammunition capacity from 250 to 500 rounds. J M Bruce, *The Aeroplanes of the Royal Flying Corps*, Putnam, London, 1992, p.462.
[123] L W Sutherland, *Aces and Kings*, Hamilton, London, p.4.
[124] Bridgman & Stewart, pp.28-9; Cutlack, p.451.
[125] Jones, Vol III, p.352.
[126] W A Musciano, *Eagles of the Black Cross*, Obolensky, New York, 1965, p.92; Jones, Vol III, p.351.
[127] Brig Gen W S Brancker, cited in AWM 90/0604 PR 90/138, "Training the Military Flyer", p.89.
[128] Jones, Vol III, p.299.
[129] H A Jones, *The War in the Air*, Vol V, Clarendon Press, Oxford, 1935, pp.435-6.
[130] 69 SQN RFC War Diary, Jul 1917, p.3.
[131] Douglas Sloane, letter, 13 Aug 1917, Sloane, p.69.
[132] Sloane, p.76.
[133] Douglas Sloane, letter, 19 Aug 1917, Sloane, p.73.
[134] Australian Red Cross Society, London, letter, 3 Oct 1917, cited in Sloane, p.77.
[135] 69 SQN RFC War Diary, Aug 1917, p.4.
[136] Jones, Vol II, p.325.
[137] H A Jones, *The War in the Air*, Vol IV, Clarendon Press, Oxford, 1934, pp.274-5.
[138] Jones, Vol II, p.117.
[139] RFC memorandum on the principles of fighting, 23 August 1917, cited in M Baring, *Flying Corps Headquarters 1914-1918*, Buchan & Enright, London, 1985, p. 246.
[140] 69 SQN RFC War Diary, summary of 9 Nov 1917.
[141] The 112-lb bomb had been the standard British heavy bomb since Oct 1915, and was supplemented in Nov 1916 by the 230-lb bomb. Jones, Vol II, p.104.
[142] Brig Gen Trenchard, "Future Policy in the Air", 22 Sep 1916, cited in Jones, Vol II, p.474.
[143] B Robertson, *WWI British Aeroplane Colours and Markings*, Albatros Productions, Berkhamsted UK, 1996, p.12. Robertson also gives the date of introduction of P.C.10 as APR 1916, in his 1994 Windsock-series books on the B.E.2c and Bristol Scout. Rogers [p.18] states that the date of introducing so-called 'Protective Coating No.10' (i.e. P.C.10) was not known, but in JUN 1916 aircraft proceeding to France were to have P.C.10.
[144] P.C.10 was developed by the RFC, and would vary in tone depending on prevalent lighting conditions from green to brown, weathered and aged towards brown, and when the paint formula varied the colour could be between a lighter green through olive drab to chocolate brown. To complicate this further, the specification was apparently changed later in the War. There is an in-depth debate of the 'green-ness' vs 'brown-ness' of P.C.10 here:
http://www.theaerodrome.com/forum/showthread.php?t=41185
[145] IPMS gives the FS 595a equivalent of CDL as FS13617, and P.C.10 as FS14087:
http://www.ipmsstockholm.se/home/urbans-color-reference-charts-part-i/urbans-colour-reference-charts-united-kingdom/
Other sources give P.C.10 a gloss finish as FS34087, which is the 1956 FS 595a colour for US Olive Drab, or the 1989 FS 595B FS34088. The metal engine cowls on most aircraft were generically referred to as *Battleship Grey*, FS36408.
[146] PRO AIR1/867/204/5/523, CRFC 1693G, dated 19 Sep 1917.
[147] L Rogers, *British Aviation Squadron Markings of WWI*, Schiffer, Atglen PA USA, 2001, pp.7, 132.
[148] Rogers, p.132.
[149] B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester UK, 1987.
[150] Robertson, *WWI British Aeroplane Colours and Markings*, pp.48-57.
[151] Robertson, *WWI British Aeroplane Colours and Markings*, p.33. In his earlier work (*British Military Aircraft Serials 1878-1987*, p.71), Robertson stated rudder striping had been 'introduced' in March 1915 – perhaps there is a subtle difference between 'introduced' and 'adopted,' 'introduced' when rudder string first appeared and then 'adopted' when it became mandatory.
[152] Robertson, *WWI British Aeroplane Colours and Markings*, p.26.
[153] Bennett, *The Imperial Gift*, p.195. These US FS595a colours can be further approximated to the British BS381C 108 *Aircraft Blue*, and BS381C 538 *Cherry*.
[154] In addition, B.E.2d 5879 was on 69SQN strength in France SEP-DEC 1917, withdrawn to 1AD on 19 DEC 1917.

[155] Letter by Douglas Sloane of 20 JUN 1917 records "was out at Waddington drome to bring home one of the B.E.2s which Mr Teesdale-Smith of Adelaide gave us, & it was smashed beyond repair owing to its landing gear fouling a wire fence. Teesdale-Smith gave us two machines". Sloane, pp.59-62. R.E.8 A3662 inherited this gift inscription.
[156] G Page & J Halley, Armstrong Whitworth F.K.3, *Aeromilitaria Vol.36*, Air Britain, Shepperton Middlesex UK, Winter 2010, p.163.
[157] http://www.bcar.org.uk/world-war-one-incident-logs#1917
[158] Robertson, *British Military Aircraft Serials 1878-1987*, p.33.
[159] J M Bruce, *The Aeroplanes of the RFC*, Putnam, London, 1992, p.210.
[160] K Isaacs, *Military Aircraft of Australia 1909-1918*, AWM Canberra, 1971, p.172. Isaacs lists B1911 as a 69SQN aircraft.

End Notes: Getting the RAAF Numbers right in WW2 Part 4; the 1940-1943 Transport Operations and formations by Gordon R Birkett @2018

[161] Crew; F/O Noel Wilson Webster Serv#847, F/Sgt Lionel Maurice Van Praag Serv#60431, Sgt Eric Picker Serv#8602 and Cpl Frederick Christopher James Mason Serv#10306. All four were evacuated by RAAF Hudson from Wiangapoe, and then flown to Australia on the 10/02/42 from NEI. F/Sgt Lionel Van Praag Serv#60431 and admitted 1RAAF Hospital 10/02/42. Awarded the George Medal, He later became a F/Lt in 36Sqn RAAF later in the war. Log book entries included Kittyhawk and CW-22 Curtiss Falcon, and would later fly for Adastra Aerial Survey flying Hudsons. A30-8 ex DC-2-112 c/n1291 Order #603 Ex Eastern Airlines DC-2, NC13781. Overhauled Miami Eastern Airways Depot. Shipped "MV Port Chalmers" ex USA ex USA 30/09/40. Rec ANA ex USA 03/01/41.Rec 1AD ex ANA 09/01/41. Rec Signal School ex 1AD 02/02/41. Rec 2WAGS ex Signal School 07/06/41. Rec 1AD ex 2WAGS to be fitted with DF Loop and have engine change 05/01/42. Issued 2WAGS ex 1AD 12/01/42. Shot Down 28/01/42 enroute Surabaya - Koepang. ***The start point was in fact Soerabaja, Java.*** **This was where the 17th PS (Prov) P-40Es initially operated from, as it was ferrying Crew Chiefs and Armours x 22 ex Darwin. Actual crash location was off the coast between Soemba Straits and Flores Island**. Struck off Records 27/02/42 Per File#9/1/1123. Fitted Wright Cyclones Engines#21682 and 22756

[162] A50 History Sheet Headquarters, North Area RAAF Page 168 per 9th March 1942 per Mission T1, at Nouma 10th March 1942, Vila on 11th March 1942. Initially scheduled for 7th March 1942 per P167 but cancelled due to weather. Details are missing as there is a gap per Title: RAAF Unit History sheets (Form A50) [Operations Record Book - Forms A50 and A51] Number 33 Squadron Mar 42 - Feb 46 from March 42 to January 1943.
[163] A50 History Sheet Headquarters, North Area RAAF Page 188 per 24th April 1942 per Mission TOW2 and TOW3 A18-11
[164] Later VH-UZJ was re-camouflaged June 1942

[165] A50 History Sheet Headquarters, North Eastern Area RAAF Page 218 per 10th July 1942 Mission PM90. When performing flights to Port Moresby, clearing sweeps for Japanese Ships and Submarines were done such as TOW72 on 8th July 1942 Page 217 and 1st July 1942 per Page 212
[166] Good references per Australia at War Site: https://www.ozatwar.com/japsland/land11.htm
https://www.ozatwar.com/japsubs/mamutu.htm : The Wireless Operator on "Mamutu", Mr. R.J. Furbank sent a morse code message to Port Moresby to advise of the submarine's presence. RO-33 closed in at about 19 knots and caught up with "Mamutu". RO-33 opened fire with its 3.25" (80mm) gun. The first shot hit the radio room and killed Mr Furbank. The second shot wiped out the bridge killing Captain J. McEachern. Others shells hit the hull. Many people were killed or injured in the accurate barrage from RO-33.

[167] A50 History Sheet Headquarters, North Area RAAF Page 252 7th – 8th August 1942

[168] Excerpt from Dr Peter Boer's records: On 19 February 1942 the MLD flew Dornier Do-24Ks with serials X-5, X-7, X-8, X-9, X-10 and X-24 to Australia where all of them, except X-24, were transferred to the RAAF. X-24 was retained by the MLD until October 1943 when it was also transferred to the RAAF.

The details are:

- X-5 (c/n 765) went to the RAAF as A49-1 on 29 April 1942. It was withdrawn from use on 20 December 1944.
- X-7 (c/n 767) went to the RAAF as A49-2 on 29 April 1942. It was withdrawn from use in 1944.
- X-8 (c/n 768) went to the RAAF as A49-3 on 29 April 1942. It was withdrawn from use on 20 December 1944.
- X-9 (c/n 769) went to the RAAF as A49-4 on 29 April 1942. It was withdrawn from use on 20 December 1944.
- X-10 (c/n 770) went to the RAAF as A49-5 on 29 April 1942. It was withdrawn from use on 11 March 1944 at Darwin.
- X-24 (c/n 785) remained with the MLD until it went to the RAAF as A49-6 in October 1943. It was withdrawn from use on 20 December 1944.

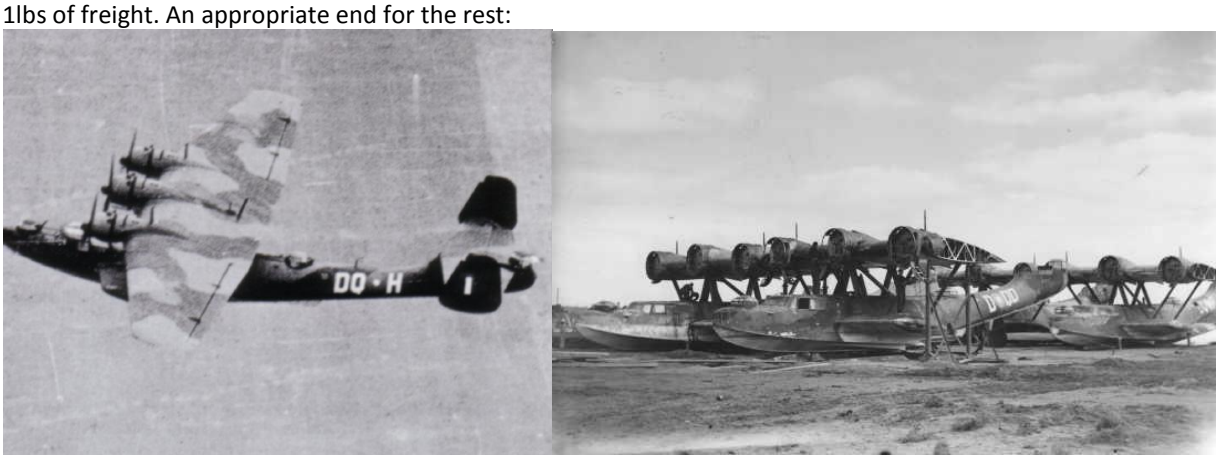
ADF Serials has: Five of the six MLD aircraft acquired by the RAAF (X-5, -7, -8, -9 and -10) spent nearly all their time as training machines with the MLD Aviation Training School at the Dutch Naval Air Station in Morokrembangan, Batavia, Java, while the sixth aircraft (X-24) served with No 7 Groep Vliegtuigen (GTV 7). The five training machines were sent to Australia in February 1942 after the Japanese invasion of the East Indies and X-24 was evacuated later in March 1942. All the Dornier's were in poor condition and required several months of repairs and modifications after reaching Australia. The aircraft were given RAAF Serials A49-1 thru A49-6 consecutively. One of the machines (A49-6) served the majority of its remaining career with the Netherlands Forces Intelligence Service flying between Australia and the NEI, while the other five (A49-1 thru A49-5) served with No 41 Maritime Transport Squadron based in Townsville, Queensland. Maintaining the aircraft proved to be very difficult as spares were virtually non-existent because the aircraft arrived without support equipment, servicing manuals or tools. All 41Sqn aircraft spent long periods of time unserviceable awaiting repair to the troublesome engines; electrical systems or the hull. For these and other reasons the aircraft were only used for a relatively short time and by June 1944 five were placed into long term storage and one had been destroyed in an accident. Sometime during 1945 the remaining five aircraft were scrapped by No 1 Flying Boat Repair Depot at Lake Boga, Victoria.

[169] A49-5 was undergoing minor electrical repairs whilst moored in Darwin harbour waiting to depart on a mission. At 1135hrs a fire broke out and quickly took hold despite the fire fighting efforts of the crew onboard. The fire intensified and the crew were forced to evacuate, the fire then consumed the aircraft and was only extinguished when the aircraft sank in the harbour. Electrical Fitter A131530 LAC Bert Charles Hokin suffered a serious hand injury and extensive burns and electrical fitter A40686 LAC James Lindsay Viggers suffered extensive 3rd degree burns and was in a serious condition. The aircrew comprising of pilot O403391 FLGOFF PE Wright; 2nd pilot PLTOFF AB Farmer; navigator SGT G. English; WOP A418992 FSGT Ken Wall and gunners LACs VL Saunders, JW Sutherland and NK Olive all suffered smoke inhalation and minor burns.

14Mar44 Allocated to No 14 Aircraft Repair Depot and approved for recovery of any serviceable equipment and conversion to components of the remainder. Source ADf Serials.

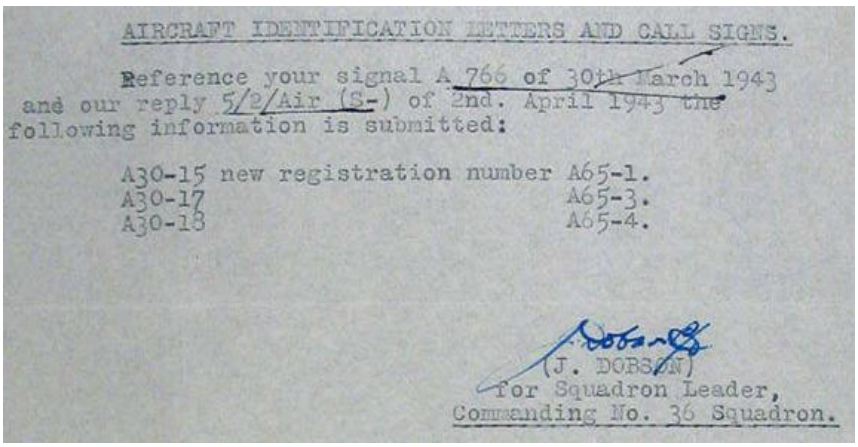
26Mar44 Wreckage recovered by 14ARD and converted. Total aircraft life was 554.05 hours

A49-5 served a total of 258 days with 41Sqn between June 1943 and March 1944 and was unserviceable for 128 days or 49% of the time. During that period the aircraft accumulated 418.33 operational flight hours; carried 322 passengers and transported 147,230 1lbs of freight. An appropriate end for the rest:



[170] The Squadron was equipped with a single B-17C (40-2072), eleven ex NEI C-56's(LT907/8/9/14/16/17/19/21/23/24/25), two C-39s(Military DC-2s (with DC-3 Midsections and cargo doors)and one C-47 (41-7733)

[171] The first four, A30-15 to A30-18 were part of the C-47-DL Allotment request of 12 aircraft in October 1942, of which only four were approved by USA under Case 126 Diversion 173 Aus#4 and Aus#8 for two aircraft each. Re-serialled as A65-* to ensure non-mix up of DC-2 verses C-47 RAAF Stores Parts Supply. The following 10 C-47A-20-DL aircraft, A65-5 to A64-14 were part of anuary 1943 Case 200 under Diversion 269 Aus#8.



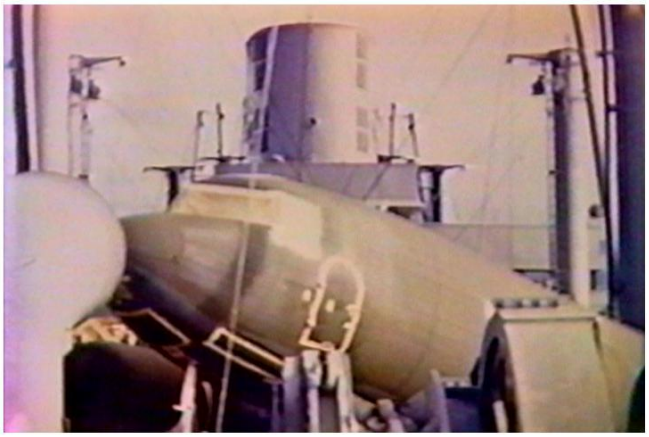
AIRCRAFT IDENTIFICATION LETTERS AND CALL SIGNS.

Reference your signal A 766 of 30th March 1943 and our reply 5/2/Air (S-) of 2nd. April 1943 the following information is submitted:

A30-15 new registration number	A65-1.
A30-17	A65-3.
A30-18	A65-4.

(J. DOBSON)
for Squadron Leader,
Commanding No. 36 Squadron.

[172] A30-15 would be re-serialled A65-1 on the 30th March 1943. A30-16 would not be, as this was lost prior to re-serialising (E/E-18 A65 Card created), A30-17 became A65-3 and A30-18 became A65-4.
[173] Rare Colour Pictures of them on the SS Polk : Source: GRB Collection



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[174]The No 1 OTU Detachment Flight comprised of the following twenty aircraft allotted (including four replacements)during the period for a In-Use Establishment of sixteen aircraft.: Hudson Mk1s A16-1, 2, 3, 26(Damaged at Cooktown 27/12/42), 30, 32, 34(Replacement for A16-114), 36, 45, and 46(Damaged at Parkes 11/12/42), 80 and 88 / Hudson MkIVs A16-102, 105, 110(Damaged at Parkes 11/12/42), 114(Replaced by A16-155), 127, and 128. An additional two MKIIIs was added later as attrition replacements: A16-155 and A16-171.
A16-105 exists to this day at Canberra Airport.
[175] Lockheed Hudsons MkIV's with DAT Radio Callsigns: VHRBA (A16-113),VHRBB (A16-115),VHRBC (A16-120),VHRBD (A16-122),VHRBE (A16-124),VHRBF (A16-131), VHRBG (A16-134), VHRBH(A16-147),VHRBI (A16-148) and VHRBJ (A16-149)
Truscott's bail out by Gordon R Birkett
[176] Source: http://www.rogerdarlington.me.uk/Spitfire.html
[177] I am somewhat concerned that the serial of this aircraft quote per "Gingerbread" is incorrect: A further two are noted by other researchers to be carrying the same name: Spitfire MkV AB857 and AB935.
[178] In the near future, a Presentation Spitfire was named after him: Spitfire MkV BM308