ADF Serials Telegraph News

News for those interested in Australian Military Aircraft History and Serials

Volume 9: Issue 1: **Autumn 2019 Edition** *Editors and Authors: John Bennett and Gordon R Birkett*

Message Starts: In this Issue**:**

Please address any questions to: question@adf-serials.com.au or
https://www.facebook.com/groups/233552413412953/

News Briefs gathered by JB

Hornets to Canada

22 January to 15 February 2019: The RAAF deployed a contingent of approximately 370 personnel to Nellis AFB in Nevada for **Exercise Red Flag 19-1**. Up to 6 F/A-18A Hornet aircraft from 77SQN (including A21-18, -39, -53, -54, -55 and -56), an E-7A Wedgetail from 2SQN (A30-002), and an AP-3C (EW) Orion from 10SQN deployed on the multi-nation exercise.

Red Flag 19-1 also involves participants from the United States Navy as well as the Royal Air Force. Training alongside allied nations is critical to the success of Air Force units on operations in helping develop further familiarity with foreign terminology, procedures and equipment. On 17 February 2019, two of the Red Flag F/A-18s were delivered to the Royal Canadian Air Force (RCAF) at CFB Cold Lake on a direct flight from Nellis AFB as part of the RAAF Hornet disposal to Canada.

17 February 2019: As reported in the Dutch SCRAMBLE magazine, the first two ex-RAAF F/A-18 Hornets, that were deployed with 77SQN to Nellis AFB for Exercise 'Red Flag 19-1', were delivered to CFB Cold Lake on 16 February, and were handed over by the RAAF's Commander Air Combat Group, AIRCDRE Mike Kitcher, and Commanding Officer 77SQN, WGCDR Jason Easthope, at a formal ceremony on 17 February, 2019. The two aircraft are **A21-53 and A21-55**, flown respectively by Kitcher and Easthope.

A21-53 on arrival at CFB Cold Lake

25 surplus F/A-18 Hornets are being sold by the RAAF to the RCAF, with 18 to be flown operationally as an interim measure to augment the existing fleet until arrival of a replacement. The remaining seven will be used for spare parts and testing. The actual 25 of those being transferred to the RCAF is still unknown. A total of 40 RAAF Hornets have been marked as available for the transfer, comprising 29 F/A-18As and eleven F/A-18Bs. The rest of the Hornet deal will be delivered by Antonov An-124 in the upcoming months.

A21-55 official handover ceremony at CFB Cold Lake

The RCAF indicated that once in Canadian service, the Hornets will be allocated serials in the following ranges: 188001 to 188099 for the F/A-18As and 188101 to 188199 for the F/A-18Bs: RCAF serials are derived from the RAAF serial, **A21-1** would become **188001**, **and A21-111** would become **188111**. The two delivered were **A21-53 / 188053** and **A21-55 / 188055.** Numbers differ from the original CF-188 Hornet serial range blocks: 188701 to 188798 for the CF-188s (F/A-18A) and 188901 to 188940 for the CF-188Bs (F/A-18B). According to the Canadian Department of

National Defence (DND), the first pair of Hornets could be operational as early as this northern summer – however, complete commonality may take longer. The excellent RAAF Hornet Upgrade (HUG) program that extended the LOT of our 'Classics' gave a F/A-18C avionic capability with regards to radar, avionics, comms, EW fit and advanced weapons capability. This DND brief below provides the major changes to bring to RCAF CF-188 standard, which also includes landing gear and ejection seat modifications.

The Canadian DND details of converting the Hornet "Interim Fighter Aircraft" (Plus Editor's extra Mod added)

Exercise 'Cope North 19' Guam, 18 February-8 March 2019

18 February: The RAAF has deployed 16 aircraft and 450 personnel to Andersen AFB, Guam, to participate in Exercise 'Cope North 19', from 18 February to 8 March 2019. The United States and Japan are also participating. RAAF aircraft involved are: 12 F/A-18A Hornets, an E-7A Wedgetail AEW&C, two C-27J Spartans, and a KC-30A AAR tanker.

Exercise participants – image includes 2 RAAF Hornets, a C-27J, and an E-7A *[USAF photo]*

SOF MRH-90 Taipans

1 February 2019: At last Special Operations Command has begun the replacement of its Blackhawks to MRH-90 Taipans, with the first two being accepted at Holsworthy, while a large of Blackhawks continue at Holsworthy for Special Operations. The MRH90's counter-terrorist and offshore SOF capability are now being developed, and the process of replacing the final 20 Black Hawks should be complete by the end of November 2021, when the platform will have been phased out of ADF service.

Some developments for SOF Taipans – a window mount for the MRH-90's minigun, and a sniper on the ramp

F-35A Lightning II Deliveries

25 January 2019: After the report in our last issue of the first ten RAAF F-35s, the next two – **A35-011 and A35-012**, Lot 11 aircraft – made their maiden flights on 25 January 2019, and joined the US-based F-35s at Luke AFB in February. The RAAF's first two home-based F-35s – A35-009 and A35-010 from Lot 10 – had arrived at RAAF Base Amberley, before proceeding to RAAF Williamtown for welcoming celebrations on 10 DEC 2018. A further delivery update with the FMS FY17-serials is provided below.

F-35A A35-012 first flight on 25 JAN 2019 *[pic F-16.net]*

RAAF Serial	USAF Serial	msn	First Flight	Details
LRIP Lot 6				
A35-001	12-5060	AU-01	29 SEP 2014	61FS Luke AFB, del DEC 2014, 2OCU mkgs
A35-002	12-5061	AU-02	1 OCT 2014	61FS Luke AFB, del DEC 2014, 2OCU mkgs
LRIP Lot 10				
A35-003	15-5211	AU-03	DEC 2017	61FS Luke AFB, del DEC 2017, 3SQN mkgs
A35-004	15-5212	AU-04	12 DEC 2017	61FS Luke AFB, del DEC 2017, 2OCU mkgs
A35-005	15-5213	AU-05	JAN 2018	61FS Luke AFB, del 2018, 2OCU mkgs
A35-006	15-5214	AU-06	MAR 2018	61FS Luke AFB, del 2018, 2OCU mgs
A35-007	15-5215	AU-07	2 JUL 2018	61FS Luke AFB, del 2018, 3SQN mkgs
A35-008	15-5216	AU-08	16 JUL 2018	61FS Luke AFB, del 2018, 3SQN mkgs
A35-009	15-5217	AU-09	15 AUG 2018	del SEP 2018, **3 SQN Williamtown 10 DEC 2018**
A35-010	15-5218	AU-10	16 AUG 2018	del SEP 2018, **3 SQN Williamtown 10 DEC 2018**
LRIP Lot 11				
A35-011	17-5294	AU-11	25 JAN 2019	61FS Luke AFB, del FEB 2019, 3SQN mkgs
A35-012	17-5295	AU-12	25 JAN 2019	61FS Luke AFB, del FEB 2019, 3SQN mkgs
A35-013	17-5296	AU-13	MAR 2019	2OCU markings
A35-014	17-5297	AU-14	15 MAR 2019	61FS Luke AFB, 2OCU markings
A35-015	17-5298	AU-15	MAY 2019	3SQN markings?
A35-016	17-5299	AU-16	MAY2019	3SQN markings?
A35-017	17-5300	AU-17	JUL 2019	3SQN markings?
A35-018	17-5301	AU-18	JUL 2019	2OCU markings?

Estimated data provided in red.

Lockheed Martin low-rate initial production (LRIP) is divided into FY "Lots". For the RAAF's final batches of 62 aircraft, ordered under Project AIR 6000 Phase 2A/B, will be Lot 11 to Lot 15:

- In 2019, to finalise 3SQN requirements, will be eight **Lot 11** (A35-011/A35-018), with FY17 USAF serials, known USAF deliveries have been 17-5237 to 17-5287;
- After these USAF deliveries are six Lot 11 for Norway – 17-5288 to 17-5293 (RNoAF 5288 to 5293);

The RAAF next eight Lot 11 aircraft could follow, from 17-5294 to 17-5302;

- Then deliveries will gain further momentum with 15 **Lot 12** scheduled for delivery in 2020 (A35-019/A35-033), with FY18 serials (some sources state 20); and
- **Lot 13** FY19 and **Lot 14** FY20 to be delivered in 2021 and 2022 respectively, then presumably **Lot 15** FY21 in 2023.

3SQN will conduct a two-year verification and validation (V&V) period with the F-35 from early 2019. The V&V will be the major effort in order to achieve an initial operational capability (IOC), and will validate the F-35's capabilities in an Australian operational and maintenance environment, i.e. *operational effect*iveness and *operational supportability*.

In the meantime in the US, Australia will continue to build its cadre of F-35 pilots with the USAF 61st Fighter Squadron's (61FS) multi-national Integrated Training Centre (ITC, sic) at Luke AFB.

Lockheed Martin low-rate initial production (LRIP) is divided into FY "Lots".

For the RAAF's final batches of 62 aircraft, ordered under Project AIR 6000 Phase 2A/B, will be Lot 11 to Lot 15:

- In 2019, to finalise 3SQN requirements, will be eight Lot 11 (A35-011/A35-018),with FY17 USAF serials, known USAF deliveries have been 17-5237 to 17-5287;
- After these USAF deliveries are six Lot 11 for Norway – 17-5288 to 17-5293 (RNoAF 5288 to 5293);
- Then deliveries will gain further momentum with 15 Lot 12 scheduled for delivery in 2020 (A35-019/A35033), with FY18 serials (some sources state 20); and
- Lot 13 FY19 and Lot 14 FY20 to be delivered in 2021 and 2022 respectively, then presumably Lot 15 FY21 in 2023.

P-8A Poseidon Details

As previously reported, our ninth P-8A **A47-009** (msn 64165) has line number 7324 and registered as N391DS; **A47-010** (64166), has line number 7392 and is registered as N397DS. A47-011 is msn 64167 N398DS. A47-012 may be msn 64168 – this is to be confirmed. A47-011 and A47-012 may be our last for a while, as the further three options are firmed into more orders.

RAAF Serial	msn	Line no.	Test Reg	Date of FAA Reg
A47-009	64165	7324	N391DS	18 SEP 2018
A47-010	64166	7392	N397DS	24 OCT 2018
A47-011	64167	7427	N398DS	14 NOV 2018

msn 64168 may be A47-012

PC-21 DELIVERIES

18 March 2019. After departing Stans on 11 JAN, **A54-027** (re-using delivery registration HB-HWA) and **A54-028** (HB-HWB), arrived at East Sale on 21 JAN 2019. The next pair **A54-029** (HB-HWC) and **A54-030** (HB-HWD) departed Stans on 8 FEB, and arrived at East Sale over 18/19 FEB 2019. These were followed by **A54-031** and **A54-032** leaving Stans on 8 MAR, and arrived at East Sale on 18 MAR.

RAAF Serial	Ferry Reg	msn	Delivery Details
A54-027	HB-HWA	260	Seen 10 SEP 18 **(Roulettes)** Stans for pre-fight checks, departed Stans 11 JAN, arrived ESL on 21 JAN 19.
A54-028	HB-HWB	261	**(Roulettes)** first flight 26 SEP 18, in flight test at Stans, departed Stans 11 JAN, arrived ESL on 21 JAN 19.
A54-029	HB-HWC	262	Seen 5 OCT 18 **(Roulettes)** Stans for first engine runs; departed Stans 8 FEB and arrived ESL on 18 FEB 2019.
A54-030	HB-HWD	263	**Roulettes** markings, departed Stans 8 FEB, and believed arrived day late at ESL on 19 FEB 2019.
A54-031	HB-HWE	264	Seen engine runs at Stans 28 NOV 18, **(Roulettes),** arrived at ESL 18 MAR 2019.
A54-032	HB-HWF	265	Seen at Stans 13 DEC18 **(Roulettes),** for the last pre-flight tests, arrived at ESL 18 MAR 2019.

So far 18, A54-019 to A54-036, have Roulette markings. As previously assessed, the large number of aircraft delivered with **Roulettes** markings does not indicate an increase in the size of the team!!, but all East Sale-based aircraft – believed to total 21 – will be marked in Roulette colours for ease of rotation through fleet maintenance. At least four aircraft – **A54-006** and **A54-018 to A54-022** – were over from Sale and on display at Avalon over the Airshow week.

A54-029 (HB-HWC) msn 262 pre-fight checks at Stans on 5 OCT 2018, delivered on 18 FEB 2019

A54-031 (HB-HWE) msn 264 for engine runs at Stans 28 NOV 2018, delivered on 18 MAR 2019

APR 2019: first flight for A54-033 msn 266 HB-HWG was on 16 JAN 2019 due at East Sale in APR 2019

APR 2019: A54-034 (HB-HWH) msn 267 taxying for airtest in the snow at Stans on 5 FEB 2019, APR 2019 delivery

MAY 2019: A54-035 (HB-HWI) msn 268 Stans for compass swinging 8 FEB 2019, due in MAY 2019

MAY 2019: A54-036 (HB-HWJ) msn 269 outside at Stans 12 FEB 2019

RAAF MC-55A AISREW.

The two MC-55A Airborne Intelligence, Surveillance, Reconnaissance and Electronic Warfare (AISREW) aircraft reported last edition, are part of a possible five system acquisition. In JUN 2018, the US DoD awarded L3 Technologies (Greenville, TX) a US$83m (A$112m) contract for the upgrade of four Gulfstream G550 business jets to the MC-55A standard for the RAAF, a contract set to run through to AUG 2021.

The aircraft are apparently being acquired in two tranches (2+2) and will be incrementally upgraded to maintain commonality with US-developed systems.

The first two 'green' Gulfstream G550 airframes were ordered in JAN 2016 and have been registered **N540GA** and **N542GD**. The following unclassified details of the known aircraft delivered to L-3 for the RAAF modifications have been advised from the internet sources.

The aircraft may inherit the name 'Peregrine' – a falcon bird of prey – coincidently, a name originally used by Gulfstream in the 1980s for a single-engine business jet.

Originally acquisition of five aircraft had been considered, but this total is now evidently four – and it appears the first of the second tranche is msn 5584.

Probable RAAF Serial	Ferry Reg	msn	Delivery Details
A51 ? -540	N540GA	5540	FAA registration 9 MAY 2016, expiration date 30 NOV 2019. Airworthy 16 MAR 2016, ferried from Gulfstream to L3 Greenville 28 MAR 2016, stored L3.
A51 ? -542	N542GD	5542	FAA registration 20 JUN 2016, expiration date 31 MAR 2020. Airworthy 21 APR 2016, ferried from Gulfstream to L3 Greenville 29 APR 2016, stored L3.
A51 ? -584	N584GA	5584	FAA registration 27 DEC 2018, expiration date 31 DEC 2021. Airworthiness 22 OCT 2018, ferried from Gulfstream to L3 Greenville 1 NOV 1018, under mod at L3.

Italian MC-55 (msn 5429) delivered in 2016 with an Israeli conformal antenna – not fitted to the RAAF MC-55A

The RAAF AISREW variant – MC-55A – would look more like this, no conformal AEW radar and a ventral gondola

KING AIR DISPOSALS

February 2019: In our last *adf-serials Newsletter*, we briefed on the folding up of 38SQN at RAAF Townsville and the transfer on 30 NOV 2018 of King Air 350s (A32-426, -437 and -439) south to 32SQN at RAAF East Sale.

This has enabled 32SQN to retire some more of its earlier King Air 350s. One, ex-A32-348, was photographed in Cairns in early February with is new registration VH-YZI.

A32-348 now as VH-YZI… and in NOV 2018 still in service with 32QN

The four 32SQN King Air 350s were released from East Sale to Hawker Pacific during DEC 2018: A32-339, -348, -350 and -372. These recent disposals, listed below, may well end up sold to the USA:

RAAF Serial	2019 VH- Reg	msn	Previous Registrations	Disposal Details
A32-339	**VH-YZF**	FL-339	N5039E, VH-DHP	Reg to Hawker Pacific 16 JAN 2019.
A32-348	**VH-YZI**	FL-348	N5048F, VH-VHP	Reg to Hawker Pacific 16 JAN 2019.
A32-350	**VH-YZK**	FL-350	N350BK, VH-XHP	Reg to Hawker Pacific 16 JAN 2019.
A32-372	**VH-YZN**	FL-372	N6172B, VH-PHP	Reg to Hawker Pacific 16 JAN 2019.

Sometimes references refer to these as "Beech 300 Super King Air 350s" or "B300", and sometimes as "Beech 350s". They are all Super King Air 350s. Earlier, by mid-2018, four had already passed back to Hawker Pacific and were subsequently sold in the USA in SEP 2018:

RAAF Serial	2018 VH- Reg	msn	Previous Registrations	Disposal Details
A32-343	VH-YZG	FL-343	N5043X, VH-JHP	Reg to Hawker Pacific 15 JUN 2018, sold to USA as **N339CA** 4 SEP 2018.
A32-346	VH-YZH	FL-346	N5046Y, VH-UHP	Reg to Hawker Pacific 20 APR 2018, sold to USA as **N364CA** 4 SEP 2018.
A32-349	VH-YZJ	FL-349	N35149F, VH-WHP	Reg to Hawker Pacific 27 JUN 2018, sold to USA as **N349CA** 4 SEP 2018.
A32-351	VH-YZL	FL-351	N5151F, VH-YHP	Reg to Hawker Pacific 15 JUN 2018, sold to USA as **N334CA** 4 SEP 2018.

To have a better understanding of why these aircraft were sold, we need to look at the shuffling of airframes in the management of the RAAF King Air fleet.

- These eight 32SQN "-300 series" aircraft had replaced the original East Sale-based King Air 200 fleet (A32-001 to A32-004) from 2003.
- With the decision to disband 38SQN in 2018, the airframes with the lowest hours and the most recent avionics configuration – the Rockwell Collins Proline 21 avionics suite – would be consolidated in 32SQN.
- In SEP 2018, the transfer of the five later "-600 series" aircraft (acquired by 38SQN in 2010) to 32SQN enabled the retirement of four of their "-300 series" aircraft (shown above). These "-600s" have the Proline 21 electronic flight instrument system and the acquisition by 32SQN enabled pilot conversions to begin.
- Also from 2017, four newly-manufactured 2015 aircraft were acquired from the USA, to build the strength of 32SQN up to 12 aircraft (see below), to support the expanding role of back-seat aircrew training and take over 38SQN roles.
- In NOV 2018, as reported in the last edition, the final three 38SQN aircraft ("-400 series", which had been ex-Army aircraft and transferred to 38SQN in NOV 2009), were transferred to 32SQN.
- JAN 2019, now with their twelve "new" aircraft, 32SQN were able to dispose of the final four "-300 series" King Airs, which are now on the Australian VH- civil register, but some may be sold to the USA.

These four have presumably been modified by Hawker Pacific over 2018 with mission sensors for the advanced East Sale rear crewmember training roles.

RAAF Serial	Previous 2018 VH- Reg	msn	Previous US Reg	Disposal Details
A32-003	VH-KQG	FL-1003	N1003V	US reg cancelled 13 DEC 16 for export to Aust, Hawker Pacific VH-KQG 18 DEC 17.
A32-008	VH-KQD	FL-1008	N5108B	US reg cancelled 27 OCT 16, to Hawker Pacific VH-KQD, presume in 2017.
A32-021	VH-KQE	FL-1021	N121HK	US reg cancelled 14 NOV 16, to Hawker Pacific VH-KQE, presume in 2017.
A32-988	VH-KQF	FL-988	N988KA	US reg cancelled 13 DEC 2016, to Hawker Pacific VH-KQF in MAY 2017.

Note that the RAAF serial **A32-003 has been reused** – as mentioned; A32-003 was originally a King Air 200 (msn BB-1401, now ZS-PLJ in South Africa, below) which served at Sale over 1999-2003.

VH-KQG in OCT 2018, became A32-003 (msn FL-1003)

VH-KQE in OCT 2018, became A32-021 (msn FL-1021)

AVALON AUSTRALIAN INTERNATIONAL AIRSHOW 2019

Classic dual with 2OU tiger stripes, A21-116, in the preshow PR buildup for Avalon

Avalon Pre-Loved Military Aircraft Auction

4 March 2019: A unique auction of 5 ex-RAAF Pilatus PC-9/As and 22 ex-Army Bell 206B-1 Kiowas was held at Avalon over 23 February to 4 March 2019, to coincide with the Avalon Airshow. Serials of these 27 ex-ADF aircraft are:

PC-9/A	206B-1 Kiowa			
A23-004 Lot 25	A17-003 Lot 16	A17-018 Lot 13	A17-036 Lot 11	A17-046 Lot 7
A23-043 Lot 26	A17-004 Lot 21	A17-026 Lot 1	A17-037 Lot 17	A17-047 Lot 3
A23-059 Lot 28	A17-011 Lot 5	A17-028 Lot 4	A17-038 Lot 20	A17-049 Lot 14
A23-066 Lot 27	A17-015 Lot 2	A17-029 Lot 9	A17-039 Lot 19	A17-051 Lot 15
A23-067 Lot 29	A17-016 Lot 6	A17-031 Lot 12	A17-040 Lot 10	
	A17-017 Lot 18	A17-032 Lot 8	A17-044 Lot 22	

Some of the auction aircraft: PC-9 A23-004, and Kiowa A17-039 *[pics Grays Auctions]*

Thanks to Martin Edwards for posting the selling prices at auction. The first amount is the winning bid, the amount in brackets is with the 9% buyers premium and 10% GST added:

- A23-004 $121,709 ($145.929)
- A23-043 $124,709 ($149,526)
- A23-059 $156,109 ($187,174)
- A23-066 $177,009 ($212,233)
- A23-067 $156,209 ($187,294)

All five purchased by a buyer from South Africa.

And for the Kiowas:
(Prices do not include 9% buyers premium and 10% GST)
- A17-003 Lot 16 $29,009 BA O'Connell NSW
- A17-004 Lot 21 $111,009 eq Victoriaville Canada
- A17-011 Lot 5 $160,109 JP Launceston TAS
- A17-015 Lot 2 $210,409 rt Broome WA
- A17-016 Lot 6 $210,009 EJ Hillston NSW
- A17-017 Lot 18 $28,509 JS Currumbin Waters QLD
- A17-018 Lot 13 $95,209 BB Kelvin Grove QLD
- A17-026 Lot 1 $250,209 AF Smithfield QLD
- A17-028 Lot 4 $225,609 cm Malvern VIC
- A17-029 Lot 9 $107,109 is Kellyville NSW
- A17-031 Lot 12 $109,709 JP Launceston TAS
- A17-032 Lot 8 $97,409 SO Horsley Park NSW
- A17-036 Lot 11 $100,709 SO Horsley Park NSW
- A17-037 Lot 17 $27,209 MG Victoria Park WA
- A17-038 Lot 20 $95,309 DD Pascoe Vale VIC
- A17-039 Lot 19 $89,309 rh Waroona WA
- A17-040 Lot 10 $96,509 DD Pascoe Vale VIC
- A17-044 Lot 22 $38,209 JM Cooroy QLD
- A17-046 Lot 7 $300,009 AF Smithfield QLD
- A17-047 Lot 3 $189,109 JP Tyabb VIC
- A17-049 Lot 14 $78,309 dd St Andrews Beach VIC
- A17-051 Lot 15 $80,809 eq Victoriaville Canada

Also up for auction was a Westland Scout AH.1, which had been displayed at the Nowra Museum as RAN "WS102/842" (Lot 23). This was in fact ex-Brit Army Air Corps XR603 (c/n 9525) – the real RAN WS102 (c/n 9491) had been lost off HMAS *Moresby* in APR 1967 – and sold for $22,209 ($26,628)

Avalon Flying

17 February 2019: The "Roulettes" from CFS RAAF East Sale performed their last ever 6 ship PC-9 "high show" at the RAAF Museum at Point Cook. Aircraft included A23-012, 025, 046, 050, 051, 052, 061 and 063. Flying at the airshow comprised joint PC-9 / PC-21 formation flyovers, and the Roulette PC-9 routine.

22 February 2019 Pre-show Flyover: The flying PR lead-up to the Show began with a combined "Roulettes" flyover with nine PC-9s and five PC-21s, which tracked over the Melbourne CBD and Point Cook airfield. The public days were over 1-3 March.

At the show 3 MAR 2019 – PC-9 Roulettes and the PC-21 4-ship

28 February 2019: A unique 5th Generation flyover pic (from Andrew Green / AJGr33n) showing a 3SQN F-35A Lightning II A35-010, with USAF 90th FS F-22A Raptor. Both A35-009 and A35-010 flew throughout the week.

NAVY Bell 429 Disposals

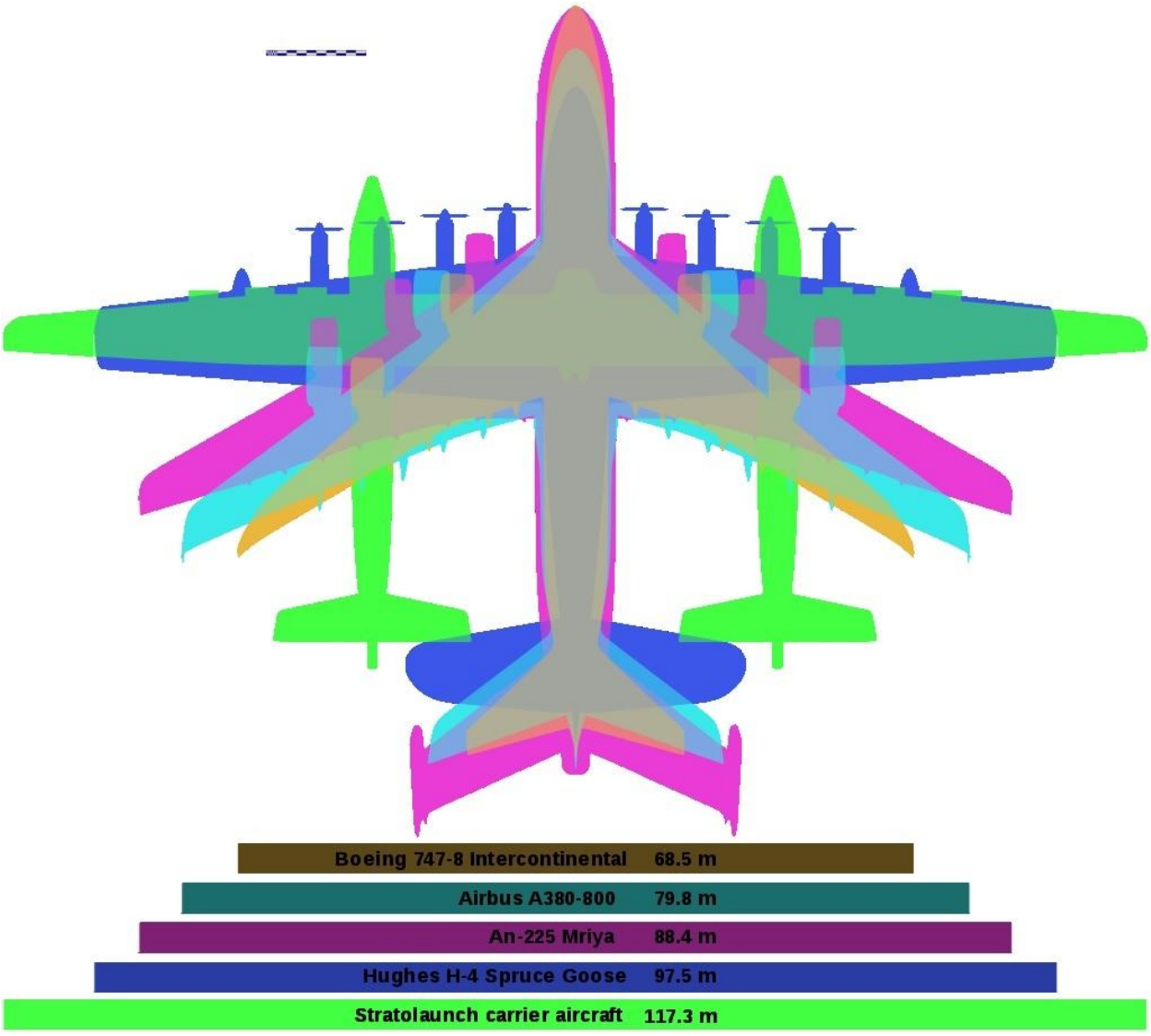
February 2019: Ex-N49-048 (msn 57048) seen at Nowra during FEB 2019. It was added to the civil register on 31 JAN 2019 with Raytheon as VH-IWS. In short time, this was packed for shipping to NZ at the end of FEB and taken off the civil register. Evidently the ex-RAN Bell 429 machines are going to the NZ Police; N49-218 is the next to cross to NZ. Evidently the ex-RAN Bell 429 machines are going to the NZ Police. N49-218/050 (msn 57218) performed at the F1 GP weekend in Melbourne over 16-17 MAR.

N49-048 (msn 57048) at Nowra during FEB 2019 with Raytheon as VH-IWS, and later packed for shipping to NZ

Though not related to ADF topic, unless in the future we launch a big ADF satellite by it, here is noteworthy, the world's newest largest Aircraft: <u>The American built Stratolaunch.</u>

It knocks out of the park, the Russian AN-225 Mryia by nearly 30 metres in wing span. The Chinese have bought the last said design and making them now in China.

Parent company; Stratolaunch Systems Corporation, is an American space transportation venture developing a new air launch to orbit system, with its corporate headquarters located in Seattle, Washington. The project was officially announced in December 2011 by Microsoft co-founder Paul G. Allen and Scaled Composites founder Burt Rutan.



Three of the six engines


Taxying tests


Types of payloads to be lifted

RAAF AIRCRAFT MARKINGS SINCE 1950 – PART 11
SILVER TRANSPORT AIRCRAFT WITH DAYGLO

John Bennett 2019

This series of articles of silver aircraft from the 1950s has previously discussed the prevalence of aluminium finish in the RAAF through the 1950s and the 1960s – similar to our all-grey aircraft today! We had earlier discussed how tactical camouflage and colours were introduced by the RAAF from 1963, and we now finalise the RAAF's love affair – and hatred – with '*dayglo*' orange, covered in some detail by the articles on Vampire and Winjeel trainers, and the Dakota.

A silver air force 1958 – *RAAF Richmond in SEP 1958, with 78 Wing Sabre Mk.30, Winjeel, 36SQN C-130A Hercules, 38SQN C-47B Dakota, 22SQN Meteor, 'midnight blue' 11SQN P2V-5F Neptune, and a little colour from a USAF Hercules*

The ubiquity of bare metal 'silver' finish, or of aluminium enamel and dope, over 1950 through to 1963 was covered in our *adf-serials* instalment "Silver to Grey".[1] A further addition – concurrent with dayglo at the beginning of the 1960s – was the introduction of cooling white upper fuselages for crew comfort, which was introduced widely on Dakota fleet, and other transport aircraft in the early 1960s: the Convair 440 Metropolitan and the Bristol 170 Freighter, both discussed here. The C-130A retained overall aluminium with its dayglo from 1961 and, although not relevant here, both Canberras and Neptunes also received white upper fuselages for crew comfort.

1959 – TAA Viscount VH-TVP shows when airline dayglo was all the rage for major airliners

Trans-Australia Airlines (TAA) was the leader in the commercial aviation sector to adopt 'dayglo' orange for high visibility for collision avoidance. The three main airliner types of the fleet – Lockheed Electra, Vickers Viscount and Fokker F27 Friendship – were adorned in dayglo but, as with the RAAF, this trend did not last longer than several years.

The Need for High Visibility

As with the trainers, it was the silver transport aircraft that received dayglo orange to provide high visibility. Other attempts at high visibility finishes were for the RAAF's first serious attempts at operations in the Antarctic, primarily for crew survivability if forced down in the unforgiving terrain. Colours used were *Yellow* then from 1956 *'International Orange'* designated by (FS595a FS12197), although later supplemented for 1959/60 by the brighter 'dayglo' – an even more fluorescent Red Orange hue – used on panels of Beavers A95-202 (in 1958, and later on A95-205), and from early 1959 on the ANARE Dakota A65-81. The next instalment will cover 'RAAF Antarctic Aircraft'.

Fluorescent Paints. 'Dayglo' had first been introduced by the US armed forces during the mid-1950s (but discontinued by 1970),[2] and was a brand name for pigments and other products that exhibited fluorescence in daylight, a daylight fluorescent coating. Fluorescence refers to a pigment that absorbs and reflects more light than conventional colours, resulting in brighter and more powerful shades. Fluorescent colours use a larger amount of both the visible spectrum and the lower wavelengths compared to conventional colours. They not only absorb and convert light energy of the dominant wavelength, but also the wavelengths of ultraviolet (UV) rays and other colours lower in the visible spectrum, and the eye perceives a far more intense colour. But fluorescent pigments will degrade from prolonged exposure to UV light, and the product had a limited shelf life, and these factors influenced its durability. Moreover, the application was resource intensive process, and took approximately two weeks.

Dayglo air force c1963 – Fairbairn with 34SQN Winjeel A85-404,[3] a visiting 36SQN A97-211, and 34SQN C-47s

RAAF Introduction of Dayglo. After a trial on Beaver **A95-202** in the Antarctic i1958, the first large silver aircraft to receive dayglo in MAY 1959 were C-47B Dakotas – **A65-80** (a Navigation Trainer / NT of School of Air Navigation), and **A65-81** painted in preparation for its tour for the Antarctic 1959/60 expedition with the ANARE. This set the benchmark for other Dakotas to adopt this scheme from 1960, primarily the Dakota NT aircraft with School of Air Navigation (SAN) at East Sale, with ARDU at Laverton, with 2 Air Trials Unit (2ATU) in support of the Woomera Range, with 38 (Transport Training) SQN at Richmond, and the C-47 freighter aircraft with the 34SQN VIP unit at Fairbairn. Trainers – Winjeels and Vampires – were 'daygloed' from 1961, the same timeframe as large transport aircraft started to receive dayglo:

- the 36SQN **Lockheed C-130A Hercules** carried dayglo from 1961, but with increasing deployment to the South Vietnam warzone, it was being stripped from 1964;
- the 34SQN VIP **Convair Metropolitans** received dayglo in 1962, but the requirement to keep a highly polished and pristine condition saw the discontinuation of this high visibility treatment after only a year in 1963; and

- the 2ATU **Bristol 170 Freighters** did not have dayglo added until 1962 (as in 1961 the type was under consideration for withdrawal), and then remained so marked until actual retirement in 1967.

One-off RESCUE A2-384, silver/dayglo Richmond in 1962; at Fairbairn 1984 in what was the standard UH-1B livery

The Application of Dayglo. Applying dayglo requiring two coats of white undercoat, three of the fluorescent orange, and three clear sealer coats, each at prescribed intervals. The RAF Air Publication directions for the application of dayglo below provides details of the process.[4]

Application

Scheme A – bare metal surfaces

5. (1) Prepare and prime the surface as detailed for the overall finishing scheme.

(2) Spray two coats of white undercoat, thinned as detailed in Table 2. Allow to dry for a minimum of three hours.

(3) Spray three coats of finishing colour, thinned as detailed in Table 2. Allow one hour drying time between coats and sixteen hours for the final coat.

(4) Spray three coats of transparent finish, allow one hour drying time between coats and a minimum of two hours drying for the final coat before handling.

(5) On R.N. aircraft only, over areas that are subject to contamination by ester lubricants, spray one coat of ester lubricant resistant varnish and allow to dry.

Note...

(1) For R.A.F. aircraft the transparent finish is also ester lubricant resistant.

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 and re-emit them, producing intense visible colors that appear to glow, even in daylight. With 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 with many trainers operating in a relatively confined area. A secondary consideration was that the bright colour could also assist location of an aircraft in the unfortunate event of an accident. Aircraft visibility aiding crew survival was an advantage in remote and inhospitable locations where RAAF aircraft operated.

2ATU freshly applied dayglo in 1966 – Dakota A65-105, and Freighter A81-1 shortly before its 1967 retirement

Designation. Dayglo was designated in the US Federal Standard FS595a as FS28913 (semi-gloss) *'Blaze Orange',* or *'Fluorescent Red Orange'*. In the FS595 colour standards system, the first number designates gloss (1), semi gloss (2) or matt (3). The second number is the colour family (e.g. 3 is for yellows, 5 is blues, and in this case 8 is fluorescent colours). The last three numbers of the designator are the shade, or reflectance. Therefore, FS28913 and FS38913 are the same shade of orange, only in semi gloss and matt respectively.[5]

A97-206 at Laverton 1963……*dayglo fin panels, and below/above wings and tailplanes. Kangaroo roundels on the fuselage, but Type-D still at this stage on the wings – in NOV 1965 the RAAF marking policy changed for kangaroo roundels in all six positions.*[6]

Demise of Dayglo. In general, there were several reasons for the relatively short use of dayglo by the RAAF:

- Firstly, dayglo was complex to apply – requiring several coats of white primer, three coats of the bright and glossy fluoresent orange, then three coats of clear sealant. The problem was maintenance of dayglo as despite its protective finish it did not stay bright and glossy for too long – photographic evidence suggests that after approximately two-three years, the dayglo was weathered as patchy and faded, to a dull shade of yellow.
- Secondly, as well as being resource-intensive, dayglo was expensive, and its rapid fading needed fairly frequent refreshing. Other alternatives were considered. In the UK, both the RAF and RN soon adopted dayglo 3M "Scotchcal" film as a tape, but that too required constant renewal.
- Furthermore, operational considerations impacted, when high visibility was not required in combat zones.

Concurrently as dayglo was going out of favour more generally in the transport fleet over 1964-65, tactical colours were being adopted on the Caribou and Iroquois in olive green camouflage. So from this stage, dayglo did not appear again on Hercules nor on VIP aircraft, and just left the Dakota NT fleet until withdrawn by 1969. (The exception was the ARDU C-47 navigation aid calibration fleet which kept a high visibility scheme until 1979.) So because of the deficiencies of dayglo, generally worldwide by the mid-1970s the use fluorescent paint had been discontinued.

Serial Numbering. The primary transport aircraft serving with the RAAF from the postwar period into the 1960s received different series of 'last three' numbers (depending on the policy) and their use of dayglo is summarised below.

Serial Number [7]	Aircraft Mark	Dates in Dayglo	Details
Aircraft covered in detail in this instalment			
A81-1 to A81-4	Bristol 170 Freighter Mk.21E	1962-1967	Delivered from UK over 1949-51, all-over bare metal. Dayglo added in 1962 and retained until disposal in 1967.
A96-313 and -353	Convair CV.440-78 Metropolitan	1962-1963	Delivered 1956. Highly polished bare metal, white upper fuselage, c/n serials. Dayglo in 1962, removed in 1963.
A97-206 to -216	Lockheed C-130A Hercules	1961-1965	Delivered over 1958-59, using abbreviated Lockheed c/ns serials, A97-206 was c/n 3206. Dayglo from 1961, removed by the end of 1965, aircraft withdrawn 1978.
Aircraft briefly covered here			
A65-1 to A65-124	Douglas C-47A / C-47B Dakota	1959-1969 *	All-over aluminium; 1959-60 dayglo, then removed from NT aircraft by 1969 (*retained by ARDU until 1979).
A100-390 and -392	DHC-3 Otter	1963-1967	Delivered in 1961 for range taxi duties with 1 Air Trials Unit (ATU) at Woomera, c/ns as serials. Sold in 1967 and operated by Supply then contracted to Short Bros as VH-.

Dayglo on Trainers. One of the drivers for introducing dayglo from 1961 was to avoid collisions between training aircraft, in confined and congested airspace, with high visibility colours for visual deconfliction, summarised below.

RAAF DAYGLO TRAINERS

CAC CA-25 WINJEEL

As previously related in this series, dayglo markings were carried by Winjeels from APR 1961 - this would be the longest serving *dayglo* fleet in the RAAF, as the Winjeel was not retired from the training role until 1975. [8]

D.H.115 VAMPIRE

Vampires also received dayglo finishes from JUN 1961, initially at Bankstown by DH as Vampire Modification 332,[9] and like the Winjeel, the process took two weeks commencing in JUN 1961. Most aircraft were completed by the beginning of 1962, and the Vampire withdrawn from the training schools by 1969.[10]

DOUGLAS C-47 DAKOTA

The first C-47 to receive dayglo was Dakota trainer A65-80 in MAY 1959 of School of Air Navigation (SAN), and also A65-81 painted in preparation for its tour for the Antarctic 1959/60 expedition with the ANARE. This set the benchmark for other Dakotas to adopt this scheme from 1960, primarily Dakota trainers with SAN at East Sale, and ARDU at Laverton. Also Dakota freighters of 2ATU, and 34 and 38SQNs received dayglo.[11]

As A65-81 was 'daygloed' in 1959 in preparation for the RAAF Antarctic Flight's expedition of 1959/60, this will be covered in the next instalment covering 'Antarctic Aircraft'.

BRISTOL 170 FREIGHTER Mk.21E 1962-1967

"Bristol"

No.2 (Comms) SQN had been flying at Mallala since JUL 1947, with an assortment of transport aircraft in support of the Woomera Range area. 2 (Comms) SQN was retitled 34 (Comms) SQN on 1 MAR 1948,[12] and would provide Woomera support from Mallala until 1955. For 'heavy lift' transport tasks, three Bristol 170 Freighter Mk.21E (serialled A81-1 to A81-3) were acquired in 1949. Originally manufacture of 10 Freighters was being considered in 1948, but not pursued[13] – this had followed the cancellation in 1947 of the Australian planned production of 12 Avro 688 Tudors[14] alongside the Avro Lincoln production at GAF.

The first Freighter, A81-1, with 34SQN from 1949 until being handed to ATU in 1955

The Freighter Mk.21 was powered by the 1,690hp Bristol Hercules 672 and AUW increased by 3,000 lb over earlier models, and RAAF's Mk.21E had 16 quick-change seats, cabin heating and sound insulation.[15] A fourth (A81-4) was acquired in 1951, which had to be converted in UK from a Mk.21 to a common Mk.21E standard.[16] 34SQN suffered the tragic loss in NOV 1953 of A81-2 which crashed at Mallala when its port mainplane sheared off.[17]

A81-3 with 34SQN early 1950s – spinners have been removed, anti-glare has been painted in front of the cockpit, but the WB484 serial is still carried under the wings

In OCT 1955 operations moved from Mallala to the new base RAAF Edinburgh, closer to Adelaide. 34SQN was transferred to Canberra, and the three surviving Freighters (A81-1, -3 and -4) were taken over by a new unit:

- Air Trials Unit (ATU) was formed at the new RAAF Edinburgh in OCT 1955, with the Freighters forming **ATU Detachment A ('Det A')**, to provide scheduled Edinburgh-Woomera services, and around the Range area.
- In APR 1958 ATU was divided into 1ATU at Woomera with smaller aircraft for range work, and **2ATU** at Edinburgh with Freighters and Dakotas. Both units would remain operating until the late 1960s.

RAAF Bristol 170 Freighter M.21E Summary				
RAAF Serial	**Previous UK Serial**	**C/n**	**Delivery to RAAF**	**Details**
A81-1	G-AIMI and WB482	12799	14 APR 1949	2ATU at Edinburgh and WFS MAY 1967 and disposal action started JUL 1967; sold FEB 1970 to VH-SJG. Extant at RAAF Museum.
A81-2	G-AIMO and WB483	12805	5 MAY 1949	Destroyed southwest of Mallala 25 NOV 1953 after the mainplane separated in flight.
A81-3	G-AIMR and WB484	12807	5 MAY 1949	2ATU at Edinburgh, WFS MAY 1967 and disposal action started JUL 1967; sold MAR 1970 to VH-SJQ.
A81-4	G-AHJN and WW378	12746	13 SEP 1951	Ex VT-CGX upgraded to Mk.21E for RAAF in UK as G-18-15. WW378 for ferry, still below wings in 1954. Airframe overstressed by windstorm at Woomera c1964, moved by road to EDN, SEP 1966 at M/S EDN dismantled.[18] WFS MAY 1967 and disposal action started JUL 1967.

Newly opened RAAF Edinburgh c late-1955 – no dayglo in sight yet, only red on Meteor targets

ATU Operations at Edinburgh

Construction of RAAF Edinburgh had commenced in 1953 at Salisbury, on the northern edge of Adelaide, to replace the base at Mallala, and became operational in OCT 1955. Edinburgh was the RAAF's main South Australian hub as a support base for weapons development at the joint UK-Australian Weapons Research Establishment (WRE) at Woomera, and Mallala wound down until closing in MAY 1960. The move of the Freighters to Edinburgh meant that intermediate maintenance was undertaken by Maintenance Squadron Edinburgh (M/S EDN).

Initially deeper maintenance – "reconditioning" or "overhaul", to be termed 'E' Servicing – was conducted over 1952-53 by Airflite at Bankstown, and by 1AD at RAAF Laverton over 1952-54. However Airflite soon could not find continuous work and was wound up, taken over in 1953 by Bristol Aviation Services. This new company then serviced the Bristol Freighters and military Bristol Sycamore helicopters.[19] Bristol Aviation Services was acquired by de Havilland in OCT 1962[20], and the Freighter 'E' servicings passed to M/S EDN. At this stage at Parafield, Aircraft Repair Workshops (ARW) undertook major servicing on RAAF Dakotas, and may possibly have done some minor sub-contracting on Freighters.[21] M/S EDN disbanded on 1 JUN 1965 with its functions being passed to 2ATU.[22]

Changes in Freighter Markings

Below provides a summary of how RAAF Freighter colours evolved, from 34SQN through to 2ATU.

- Aircraft were delivered to 34SQN in overall bare metal with the new-style 'Type-D' roundels (mandated by SIG/96 of JAN 1948), with matt black engine cowlings.[23] Shortly after black anti-glare panels were painted ahead of the cockpit, and the propeller spinners were removed.

1949 delivery – allover natural aluminium, Type-D national markings, RAF serials retained underwing for several years

- The next development was made c1955 for practical purposes. White tops were added to provide a cooler interior, black anti-glare retained in front of the cockpit, with attractive blue cheat lines dividing the primary colours the length of the fuselage. The cheat lines consisted of two parallel lines – the upper thick, the lower thin – but later, probably for expediency, on at least A81-3, became a single blue line.

c1955: A81-3 with the addition of the fuselage blue streamline double-lined, but before 1956 kangaroo roundels

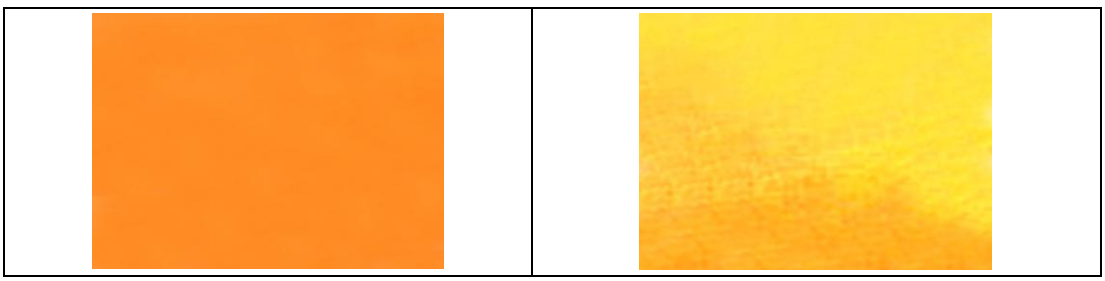
- The next major change was the 1956 introduction of the "kangaroo in motion" roundel on the fuselage.[24] Later, the NOV 1965 directive for kangaroos to be carried on all six roundel positions[25] was generally completed RAAF-wide over 1966, but with the Freighter's imminent retirement, this may not have occurred.

A81-1 with the kangaroo roundel

- Next the introduction of dayglo to the Freighter in 1962, the purpose of this story. In line with the addition of the high visibility dayglo scheme in the RAAF general in 1961, the huge lumbering Freighters working in the uncontrolled air expanses of the outback were natural candidates for anti-collision markings, with an added advantage in the case of a forced landing for survival in the harsh desert environment. However, at this stage the future of the Freighter in the RAAF was in doubt. In NOV 1960 the aircraft were recommended for disposal, and any decision by Dept of Supply on their future lingered through to SEP 1961, with the decision for retention of their capability was made, and normal operations and maintenance continued. With the three Freighters – A81-1, A81-3 and A81-4 – remaining in service, they then were scheduled to receive their dayglo over 1962, apparently applied by M/S Edinburgh.[26]

A81-3 in early 1965 with refreshed dayglo, single streamline and fuselage kangaroos, D-roundels on the wings

Dayglo was retained on the three remaining Freighters in service until their retirement in 1967.



Weathering dayglo – fresh application to A81-3 1965; already A81-4 faded after a year in 1963

A Freight Car With Wings!

A glance at the specifications below will show that the Bristol Freighter is built to carry large pay loads and to carry them at low cost. The cargo space on the "Bristol" is equal to two-thirds that of a railway freight car. It is, in very truth, a freight car with wings, providing industry with the means for speedy economical cargo delivery.

SPECIFICATIONS

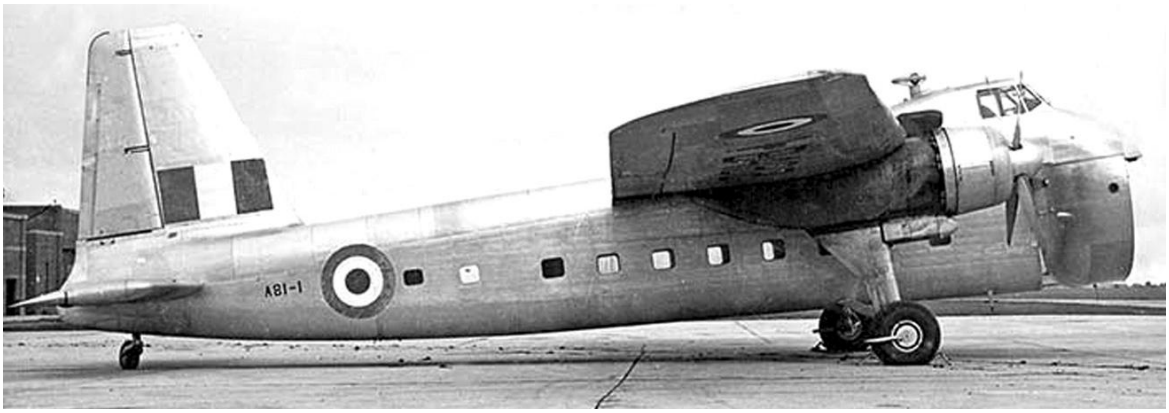
Licensed payload for 350 mile trip	10,300 lbs.
Cargo capacity	2,360 cubic feet
All-up weight	37,000 lbs.
Span	98 ft.
Cruising speed at 40% take-off power	150 m.p.h.
Rate of climb, one engine with full load	180 ft. per min.
Range	1,100 miles

All-Metal Stressed Skin Construction
Power With Two Proven "Bristol" Hercules of 1675 H.P. Each

THE "Bristol" FREIGHTER

Built by The Bristol Aeroplane Co. Limited, England

A81-1 (WB482) – BRISTOL 170 FREIGHTER Mk.21E



A81-1 soon after delivery in 1949 with 34(Comms) SQN – still with underwing WB482 serial and the smaller 48” Type-D roundels. Silver propeller spinners, sooty engine covers, fuselage kangaroos from 1956.

A81-1 in the late 1950s – white and blue time, kangaroos on the fuselage, larger 72” wing roundels, black cowls

Dayglo added from 1962, and retained until disposal in 1967 – this aircraft is now with RAAF Museum Point Cook

A81-2 (WB483) – BRISTOL 170 FREIGHTER Mk.21E

WB483 on delivery MAY 1949 prior to A81-2 serial added

A81-2 was the only RAAF Freighter not to receive dayglo because of its loss in 1953.

Roundel sizes, diameter inches (cm): fuselage 48" (cm) and underwing, above wings 72" (182.88cm)

Fin flash: 36" high, 60" wide (20" each colour)

Freighter Type-D Roundel 1949

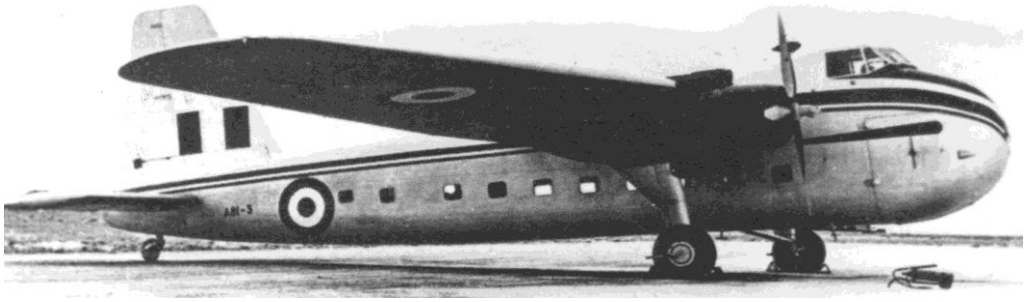
Freighter Fin Flash 36" x 60"

RAF underwing serials

42" x 26"

A81-2 was tragically lost in NOV 1953 near Mallala when the port mainplane sheared off.[27]

A81-3 (WB484) – BRISTOL 170 FREIGHTER Mk.21E



A81-3 from the mid-1950s with original style white and blue streamlines, and Type-D roundels

A81-3 in APR 1965 with fresh dayglo and fuselage kangaroos – repainting by M/S Edinburgh has simplified the blue dual streamlines between the aluminium and upper white to just a 'single blue' line.[28]

Roundel sizes, diameter inches (cm): fuselage 48" (121.9cm), mainplanes 72" (182.88cm)
Fin flash: 36" high, 60" wide (20" each colour)

Freighter Type-D Roundel 1949

Kangaroo Roundel 1956

Freighter Fin Flash

A81-4 (WW378) – BRISTOL 170 FREIGHTER Mk.21E

A81-4 pre-dayglo in APR 1958, with fuselage kangaroos and dual blue streamline

A81-4 in OCT 1962: dayglo applied at the beginning of the year has substantially faded. Kangaroo roundel on fuselage was approved in 1956, and here the normal Freighter style 'dual blue' streamline, black engine cowls, no propeller spinner, black dorsal ADF loop housing. After severe weather damage at Woomera in 1964, A81-4 became a hangar queen with M/S EDN.[29]

Freighter Type-D Roundel 1949

Kangaroo Roundel 1956

Freighter Fin Flash

A81-4 was apparently the first to receive dayglo at the beginning of 1962, and weathered quickly

A81 Freighter Mk.21E Disposals

2ATU operation of the Freighters ceased on 19 JUN 1967 as the aircraft were withdrawn pending sale by the Dept of Supply. The remaining two flyable Freighters (A81-1 and A81-3), plus the grounded third (A81-4), were offered for disposal with all associated spare parts under **Edinburgh Disposal Lists 62/67** to 359/67 on 4 JUL 1967. The two flyers would be purchased and flown on the Australian civil register as VH-SJG and VH-SJQ.

A81-1 / VH-SJG

Sold to Jet Air Pty Ltd and after overhaul registered VH-SJG FEB 1970. Both aircraft and the spare parts holding were sold by Jet Air's liquidator to Air Express Ltd cJUL 1970. Based at Essendon over 1971-78, -SJG flew freight operations, mostly to Tasmania and Bass Strait islands, in brighter colours shown below. Last flown in JUL 1978, and from AUG 1988 displayed at RAAF Museum Point Cook as A81-1.[30]

A81-1 as VH-SJG in NOV 1970 after Jet Air service, and with Air Express NOV 1972

A81-3 / VH-SJQ

Sold to Jet Air Pty Ltd and after overhaul registered VH-SJQ FEB 1970. Both aircraft and the spare parts holding were sold by Jet Air's liquidator to Air Express Ltd c JUL 1970. Based at Essendon from 1971 flying Bass Strait freight operations, VH-SJQ ditched in the Strait south of Wonthaggi in MAY 1975.

A81-3 as VH-SJQ in SEP 1970 after Jet Air, and with Air Express MAY 1971

A81-4

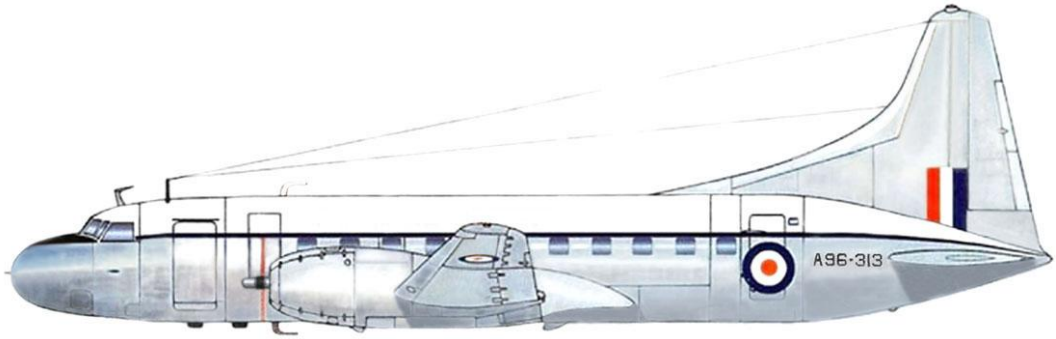
After its damage at Woomera in c1964, A81-4 had been road transported Woomera to Edinburgh but despite efforts to restore it to airworthiness, it remained hangared until disposal action in 1967. When the other two aircraft were tendered for disposal in JUL 1967 as airworthy, A81-4 was offered as a hulk, together with the inventory of spares for the entire Freighter fleet (i.e. Disposal Lists 62/67 to 359/67). After sale, the fuselage was moved off base and was on its belly outside the airfield boundary, and had been removed by JUL 1969.

A81-4 in a sorry state over 1968-69 *[all images from Geoff Goodall's Australian Aviation website]*

CONVAIR CV.440 METROPOLITAN 1962-1963

The RAAF announced the purchase of two Convair 440 Metropolitans for use as VIP transport aircraft on 22 NOV 1955. *The first aircraft A96-313 arrived at Canberra on May 16, 1956 followed by the second machine, A96-353 in December 1956.* The Convair Metropolitan then served with the RAAF until 1968. Both aircraft were CV.440-78 models, despite the second aircraft, A96-353, equipped with a longer radar nose. Both aircraft were serialled in the c/n numbering system – the first aircraft in the RAAF 'A' series to use this system: c/n 313 as A96-313, and c/n 353 as A96-353.[31]

A96-313 on delivery in MAY 1956 – pre-kangaroos, no airline-style RAAF titles



Deliveries

After operating the Bristol 170 at Mallala, 34SQN had been disbanded, reforming as 34 (VIP) Flight in MAR 1956 at Canberra, then was reorganised as an independent squadron on 8 JUL 1959 to become 34 (Special Transport) SQN.[32] Finally this was simplified to 34SQN in JUN 1963. Both aircraft were delivered in 1956, and this was just the stage when the kangaroo roundel was being approved for use on the fuselage. The delivery scheme, above, was the same for both aircraft. Fuselage roundels were still Type-D, they had highly polished natural metal fuselages with white upper surfaces and a narrow black cheat line along the top of the windows. Kangaroo roundels were added shortly after delivery, apparently by 1AD at Laverton. Later the red transport **ROYAL AUSTRALIAN AIR FORCE** titles were applied above the cheat line in 6" figures (not the more standard 10.5" transport titling[33]).

RAAF Convair CV.400-78 Metropolitan Summary				
RAAF Serial	**Previous US Regn**	**C/n**	**Delivery to RAAF**	**Details**
A96-313	N8434H	313	16 MAY 1956	11 JAN 1956 roll out as **N8434H**, 30 APR 1956 accepted by RAAF, arrived 16 MAY in Aust. 34(VIP)Flt, 34SQN. Sold 7 MAY 1968 to US **N733E**.
A96-353	N8463H	353	12 DEC 1956	Reg **N8463H**, RAAF acceptance 7 DEC 1956 and arrived 12 DEC. 34(VIP)Flt, 34SQN. Sold 25 JUL 1968 to US, Omni Investment Corp as **N588E**.

The addition of a weather radar on the production line of A96-353 gave it the pointier, sleeker nose. This, when compared to the shorter rounded nose of A96-313, often led to the confused belief that the earlier aircraft was a 'Convair 340' – this, of course, was not the case, as both were produced as the Convair model 440 dash 78 Metropolitan (CV.440-78).

1956: A96-353 delivery scheme same as A96-313, Type-D roundels and no airline style titling

Soon after delivery in 1956 both aircraft received the kangaroo fuselage roundel and the RAAF titling

TAA pressurised * CONVAIR-LINERS

FASTEST! MOST MODERN!

Proven to be immensely popular with the Nation's travelling public, TAA Convair-Liners are the only pressurised aircraft operating on Australia's internal air routes. Next time you travel enjoy TAA exclusive Convair speed and comfort.*

***Pressurisation gives passengers ground level comfort at high altitudes.**

"Fly TAA -the friendly way"

RESERVATIONS FROM TAA BOOKING OFFICES IN ALL STATES — and from all leading Travel Agencies.
TAA are GENERAL AGENTS for **BCPA** SERVICES to U.S.A. & U.K.
Use TAA's rapid delivery FREIGHT service. Freight charges may be paid by consignee at destination.

NPN16

OCT 1952 ad for TAA Convair 240s – the airline operated five; since AUG 2016 HARS have a restored 240 in TAA colours [34]

TAA was the first operator outside the USA to order the Convair; from 1948 operating five 240s: VH-TAO, -TAP, -TAQ, -TAR, -TAS.[35] Ansett-ANA operated nine 340/440s over 1954-1960, but two continued with its subsidiary Airlines of South Australia until 1972.[36]

CV.440 Metropolitan Markings

From entering service in 1956, no major servicing was conducted at Canberra by 34 (VIP) FLT or by 34(ST)SQN. The first activity involved fitting of kangaroo roundels to the fuselage and the RAAF airline titles, which was done by 1AD at Laverton or 2AD Richmond. Major 'E' Servicings were conducted by the airline TAA – first at Mascot from 1957, and from late 1960 at Essendon.

The only squadron marking carried by the VIP fleet was the 34SQN badge below the port cockpit
On the Queen's FEB-MAR 1963 Royal Tour, her EIIR crest was carried on the noses of both primary and back-up aircraft.

Dayglo on the fin and wing panels was not added to the Metropolitan until 1962. It appears that A96-313 was first at TAA Essendon (at this stage TAA had dayglo tails on their fleet, the Electra, Viscount and Friendship). But then TAA lost the RAAF maintenance contract, probably as by late 1962 TAA had disposed of its Convair fleet. Therefore, from SEP 1962 RAAF 'E' Servicings were undertaken by de Havillands at Bankstown, and that is where A96-353 received its dayglo.

On the Metropolitan, dayglo planels were painted on the fin, and above and below the mainplanes. Dayglo was not allowed to fade to unacceptable levels on the VIP squadron. The Convair 440s were kept in a highly polished pristine condition, which necessitated continual polishing, buffing and wiping. Therefore, there was an additional manpower requirement on 34SQN to maintain this shiny appearance[37] – and this appearance could not be degraded by the onset of weathered dayglo.

A96-353's short-lived dayglo, only lasted from NOV 1962 until OCT 1963

34SQN out in force for the Royal Visit in MAR 1963 – at left A96-313, and A96-353 with a Dakota freighter to rear

Removal of Dayglo. The need to keep the highly polished VIP aircraft in a pristine condition was undermined by the quick fading qualities of dayglo, and so it was removed from both Metropolitans over OCT-DEC 1963 by Hawker de Havilland at Bankstown during 'E' Servicing. Short-lived in the VIP fleet: barely twelve months.

A96-313 – the end of the Convair's dayglo 1963

A96-313 with PM Menzies 1963; removed by Air Force Open Day in Canberra (with 1BFTS A85-434) in SEP 1965 [38]

Disposal for both aircraft was initiated in SEP 1967 by Dept of Air, and in OCT 1967 it was stated that "for planning purposes this type of aircraft to phase out MAR 1968". They were declared for disposal by Dept of Supply in MAR 1968, making their final 34SQN flights in APR 1968 from Canberra to HDH Bankstown for disposal.

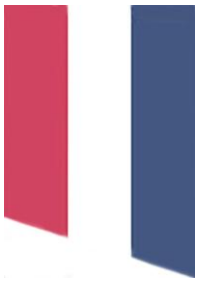
A96-353 in late 1964, with dayglo removed, and beside a newly-delivered VIP Viscount

A96-313 CONVAIR CV.440 METROPOLITAN

A96-313 without dayglo. After delivery of both aircraft in 1956, they had kangaroo roundels applied to the fuselage, the standard RAAF airline style red **ROYAL AUSTRALIAN AIR FORCE** in 6" 'Arial Narrow' characters, and the 8" 34SQN badge below the cockpit on both sides. Kangaroo roundels applied to the wings after late 1965.

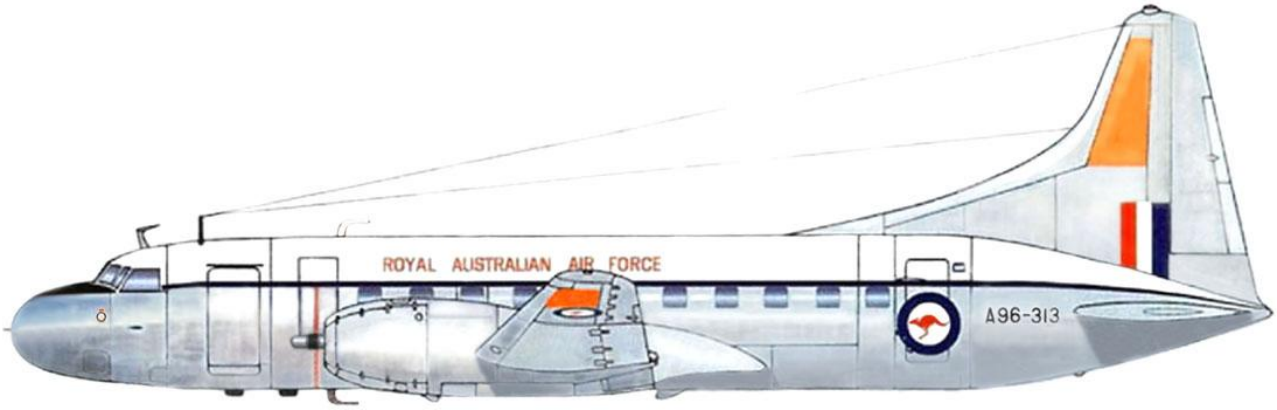
D-Roundel on delivery 1956

Kangaroo Roundel late 1956



Metropolitan Fin Flash

Roundel sizes, diameter inches (cm): fuselage 33" (83.8cm), mainplanes 33" (83.8cm)
Fin flash: 28" high leading, 34" high trailing, 24" wide (8" each colour)



A96-313 with 60" high daylo panels on fin – also applied to mainplanes and tailplane

MAR 1963 Royal Visit
The 440s carried on both sides of nose Queen Elizabeth's royal crest, or cypher – A96-353 was the primary VIP aircraft, A96-313 as the back-up.

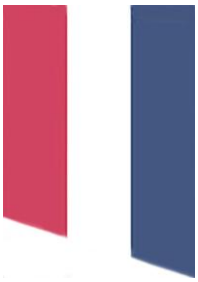
34SQN Badge on port nose

A96-353 CONVAIR CV.440 METROPOLITAN

A96-353 with dayglo fin and wing panels. "**E II R**" marking is 20" high on port and stbd, for the MAR 1963 Royal Visit. Both aircraft had the airline style red **ROYAL AUSTRALIAN AIR FORCE** 6" characters, and the 8" 34SQN badge below the cockpit on both sides, 60"-high fin dayglo. Kangaroo roundels applied to the wings after late 1965.

D-Roundel on delivery 1956

353 Kangaroo Roundel JAN 1957



Metropolitan Fin Flash

MAR 1963: Note when the "E II R" cypher was marked on the nose below the cockpit, the 34SQN badge was moved slightly aft adjacent to the entry door.

A96-353 c1962 with dayglo on fin, mainplanes and tailplane

A96 Convair 440 Disposals

The E/E.88 status cards for both aircraft are annotated with the planned disposal procedure, which had been initiated in SEP 1967 by Dept of Air.[39] On 6 OCT 1967 it was stated that "for planning purposes this type of aircraft to phase out MAR 1968", and they were declared for disposal by Dept of Supply in MAR 1968 on **Fairbairn Disposal List 7/68**. Both Metropolitans made their final 34SQN flights in APR 1968 when they flew to HDH Bankstown for disposal.[40] Both aircraft were "to be stored in serviceable flying condition by HDH for a period of two months".[41]

A96-313 / N733E / XC-DUZ

Sold to N733E JUL 1968, ferried to USA. To Mexico as XC-DUZ in 1969 with the Federal Electricity Commission (*Comision Federal de Electricidad*, registration reportedly changed not confirmed to XB-ROF, 'XC-' indicates Mexican Govt and 'XB-' private owner), stored 1995 and believed scrapped in Mexico.

A96-353 / N588E / N912PS / N912AL / PZ-TGA / N912AL

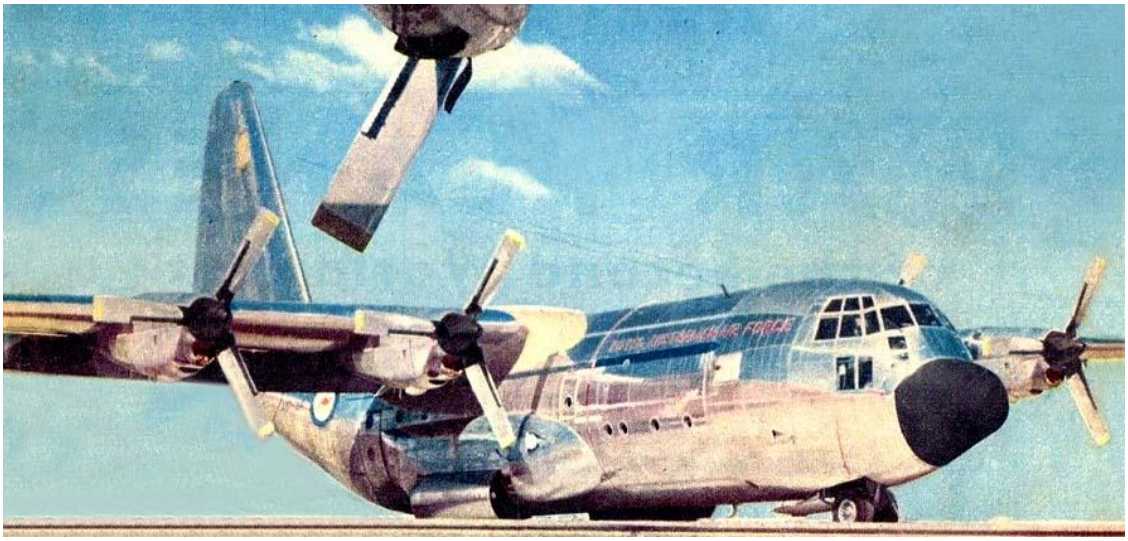
Sold to N588E JUL 1968, ferried to USA. Changed to N912PS in DEC 1968, N912AL FEB 1982, to Brazil FEB 1995 PZ-TGA, back to N912AL by SEP 1996 with Dodita Air Cargo, Puerto Rica. In storage FEB 2008, but still registered with US FAA in 2018, with a "purge date" of JAN 2023[[42]]. In use at "Aviones" Restaurant, Puerto Rica.

1989: A96-353 as N912AL in US before reg in Brazil, certainly lacking the appeal of RAAF highly polished aluminium

The Metropolitans had been replaced on 34SQN by Viscounts A6-435 and A6-436, over SEP/OCT 1964. Below is a beautiful *adf-serials* RAAF PR image of Viscount A6-436 – and not a sign of dayglo!

LOCKHEED C-130A HERCULES

Australia was the first foreign customer for the long-serving and ubiquitous Hercules transport, and the RAAF would ultimately operate 12 each of the C-130A, C-130E, C-130H and C-130J-30 models. The C-130As were ferried by 36 SQN crews over late 1958-early 1959. The updated C-130E was delivered to equip 37SQN from 1966 again in the all-over bare metal scheme, and the C-130A was replaced by the glossy camouflaged C-130H in 1978. The C-130J replaced the C-130E in 1990s, by which time 'low visibility grey' had subsumed our inventory.



The original bare metal C-130A delivery scheme 1959

Dayglo on the Hercules

Maintenance on the C-130A was conducted by 486 Maintenance SQN, which had re-formed at Richmond in AUG 1958 for the Hercules arrival.[43] Major 'E' Servicing was undertaken by 2AD until mid-1964, when this role passed to the QANTAS Jet Base at Mascot.[44] The C-130A was the only RAAF Hercules variant to be treated with dayglo, over the years 1961-64[45] by 486SQN, although it could have occasionally been scheduled into a 2AD 'E' Servicing. By 1964, Australia was engaged in war operations in South Vietnam, which required intensive C-130A support – where small arms fire could be expected even on approach and in the circuit area of Saigon's Tan Son Nhut airport.[46] This prompted removal of the high visibility dayglo in the warzone – not for fading, but for operational necessity – disappearing from the C-130A by late 1965. This increased effort resulted in a C-130E order in NOV 1964, for delivery to 37SQN in 1966.[47]

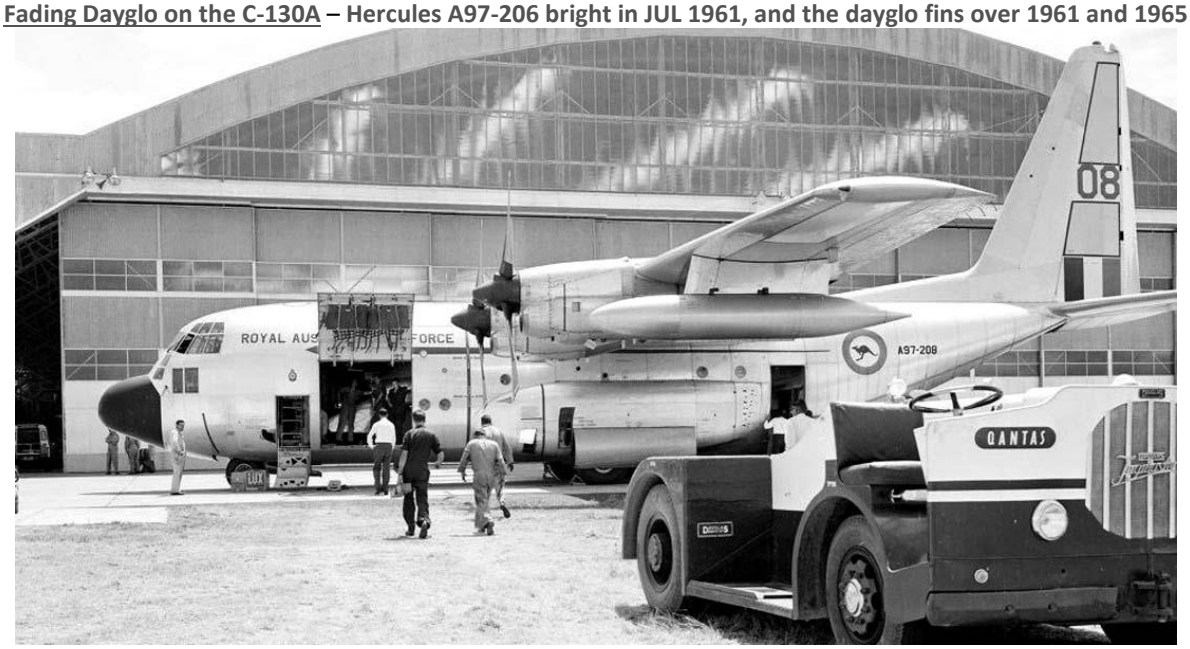
36SQN '*dayglo-ed*' C-130A line-up (A97-214, -208 and -209) at Richmond c1963, but soon removed for Vietnam

Below is an example of weathering of dayglo on the Hercules. Like the other transports discussed here, the cost and effort in renewing dayglo soon became apparent – but the relatively short era of C-130A dayglo led to its removal from the Hercules over 1964-65 for the operational realism of wartime operations in Vietnam.

Fresh FS28913 on the fin of A97-206 in 1961 (left)

Faded FS28913 on the fin of A97-213 in 1965

Fading Dayglo on the C-130A – Hercules A97-206 bright in JUL 1961, and the dayglo fins over 1961 and 1965



A97-208 unloading our first Mirage at Avalon in NOV 1963, showing the forward cargo door, not used after 1966 [48]

A97-213 SEP 1965 shows the fading dayglo fin panels

Photo of A97-213 in SEP 1965 at Richmond (which I quite like as its shows under the wing) illustrates the dayglo weathering on the fin, but apparently still fresher under the mainplanes and horizontal stabiliser – and it soon was about to be stripped

A97 – LOCKHEED C-130A HERCULES

A97-208 DEC 1963 in the definitive C-130A dayglo finish on the fin, mainplanes, tailplanes, overall aluminium, blue streamline, red **ROYAL AUSTRALIAN AIR FORCE** 10.5" characters[49], Type-D wing roundels, large '**08**' in 36" figures.

Type-D Wing Roundels

Kangaroo Fuselage Roundel

C-130A Fin Flash

Roundel sizes, diameter inches (cm): fuselage 48" (121.9cm)[50], mainplanes probably 48" (121.9cm)
Fin flash: 48" high, 72" wide (24" each colour)

A97-213 JAN 1965, faded dayglo finish on the fin and mainplanes, overall aluminium, light blue painted around the wingroots as an anti-corrosion measure, blue streamline 45' long, Type-D wing roundels, large fin '**13**' in 36" figures.

Serial numbers black 8" high, with large 'last two' on fin 36" high [51]

A97-0123456789

0123456789

C-130 **ROYAL AUSTRALIAN AIR FORCE** transport fuselage titles above blue streamline, in 10.5" red characters

A97-205 – OUR FIRST HERCULES

A97-205 soon after delivery, probably in 1959-60 with the short-lived 40-inch '05' nose number [52]

1963 – A97-205 at RAAF East Sale in full dayglo

A97-205 with crew and forward cargo doors – C-130A and C-130B had cargo doors, but discontinued for C-130E [53]

A97-205 in 1973 with 36SQN's prancing stallion

A97 C-130A Hercules Disposals

In 1978 the C-130A fleet was declared to Dept of Admin Services (DAS) for sale by **Laverton Disposal List 40/78** of 7 SEP 1978, and **List 48/78** of 17 OCT 1978. All were allotted US registrations in MAY 1978 to **Global Jet Sales** of Dallas Fort Worth[54] – then deterioration (in outside storage at Laverton) set in during the long and drawn-out tendering. Delays continued until late 1980s, and three aircraft were retained by the RAAF. A97-209 was withdrawn from sale in APR 1980 for training with AMTDU at Richmond, and A97-211 was used at RSTT at Wagga but was sent to Laverton storage by 1987 for disposal. A97-214 was allocated to the RAAF Museum at Point Cook in 1990, by which stage the last, A97-205, was derelict at Laverton. It is remarkable that nine were eventually sold to overseas buyers as airworthy.

A97-207 / N22FV / EL-AJM

Global Jet N2267B; loan to International Red Cross 1986 for Ethiopian famine relief as N22FV, registered in Liberia as EL-AJM. Returned storage Laverton JAN 1987. *[Later sold to Fowler Aeronautical USA in MAR 1989 as N207GM – qv].*

A97-207 as EL-AJM in 1987 with "The Wizard of Oz" noseart

A97-208 / N4445V / TT-PAA

Global N2267N; sold to French Govt SEP 1983 as N4445V for operation in Chad as TT-PAA DEC 1983; broken up 1999.

A97-208 operated by Chad Air Force as TT-PAA

Despite the laborious tendering and disposal process, most of the 'A' models were to be restored to airworthiness for ferrying overseas: four went to the USA, and four to Aboitiz Air Transport in the Philippines in 1988.

c1982: A97-216 (left) with A97-212, -208, -215, and probably -207 awaiting forlornly at Laverton for buyers

Aboitiz Air Transport, Philippines

A97-206 / RP-C3206

The Global Jet US registration N22669 of MAY 1978 not taken up; registered in Philippines as RP-C3206 with Aboitiz Air Transport in JUL 1988, and believed broken up for parts after NOV 1993.

A97-210 / N12FV/ RP-C3210

The Global Jet US registration N2267U of MAY 1978 not taken up; registered N12FV FEB 1986, then to Philippines as RP-C3210 in JUL 1988, and believed broken up for parts after NOV 1998.

A97-210 at Manila with Aboitiz Air Transport as RP-3210

A97-211 / N5394L / RP-C3211

Global registration N2267W (see below), but to RSTT as A/I in APR 1980, then LAV in 1987, although US reg N5394L allotted in JUL 1984. Sold to in Philippines as RP-C3211 in JUL 1988, and believed broken up for parts after NOV 1998.

A97-211 at Richmond as N2267W, but departure for the US was cancelled, and in 1988 joined Aboitiz

A97-213 / RP-C3213

The Global Jet US registration N2268G of MAY 1978 not taken up; registered to Philippines as RP-C3213 in JUL 1988, and believed broken up for parts after DEC 1995.

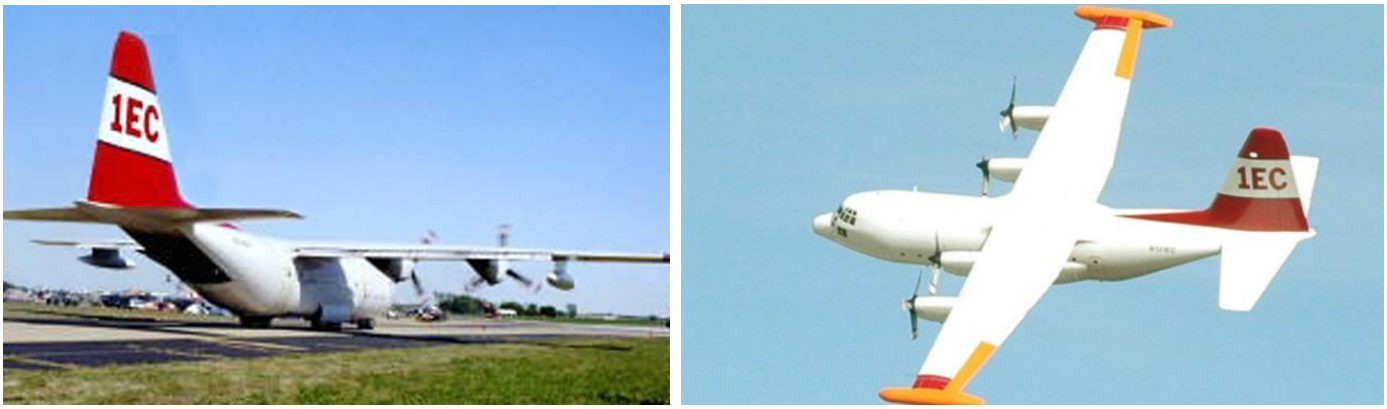
A97-213 in Philippines with Aboitiz Air Transport as RP-C3213 in 1991

“Aviaco” / Avianca Colombia

Two aircraft were purchased in 1983 from Laverton by US interests for supply to Colombia (the E/E.88s state Aviaco, but may have been with Avianca),[55] and were given Colombian registrations for ferrying to the US. Avianca S.A. is the Colombian airline based in Bogota, and the C-130s may have been intended to provide cargo and passenger services. But the on-selling of US military equipment to a third country end-user requires US Dept of State approval (which of course was also a requirement of the Australian DAS tender process). This approval was denied, and both aircraft remained in the US, passing to other civil operators.

A97-212 / HK-3016X / N13FV / N213DW / N130PS / N131EC

Originally allocated Global Jet reg N2268A in MAY 1978 (not taken up); but eventually sold in JUN 1983 to the US for sale to Avianca Colombia as HK-3016X. This was vetoed by US State Dept. Was noted extant at Dothan Alabama over 1983-84, then was registered N13FV in FEB 1985, then N213DW in FEB 1989, and N130PS in APR 1995. Sold to Cherry Air Aviation Services Inc of Louisiana (with ‘1EC’ markings) as N131EC, for a variety of tasks. In addition to skydiving, this aircraft has also been involved in UAV in-flight recovery trials in Florida, with the rear doors opening for the retriever seated in a chair to make the recovery in flight. Its registration is still current with FAA until AUG 2021.[56]



A97-212 as a skydiving platform in the US as N131EC with 1EC, flying in SEP 2004

A97-216 / HK-3017X / N15FV / N216CR

Allotted Global Jet reg N2268W in MAY 1978 but not taken up. A97-216 was eventual sold to the US for sale to Avianca Colombia as HK-3017X in JUN 1983. On arrival in USA, like A97-212, the export to Colombia was vetoed by the US State Dept. Became N15FV in FEB 1985 and was at Oakland CA in 1986, re-registered to N216CR in MAR 1989 with Fowler Aeronautical Service, of Burbank CA. Flown to OGMA storage in MAR 1993 via Gander and Shannon[57] (FAA records the export to OGMA as MAY 1998, but this may well be a delayed recording[58]), and accompanied A97-207/N207GM to be held and scrapped from SEP 2001. OGMA is the Portuguese partner of Lockheed Martin for C-130 and P-3 activity.

A97-216 as N216CR awaiting its fate at Lockheed-OGMA at Alvera, Portugal – strangely with ‘316’ nose number

Other US Departures

A97-207 / N207GM

After Ethiopian drought relief with the International Red Cross as EL-AJM, followed by further storage at Laverton in JAN 1987, A97-207 was sold to Fowler Aeronautics in MAR 1989 as N207GM USA. Flown to storage at Lockheed's partner OGMA in NOV 1992, N207GM was then stored by OGMA in Portugal in company with A97-216/N216CR. It was broken by OGMA for C-130 spares after SEP 2001 at Alvera, Portugal.

A97-207 as N207GM at OGMA Portugal storage c1998

A97-215 / N4469P

A97-215 was Global Jet registered N2268V in MAY 1978 (not taken up), then sold to US as N4469P OCT 1983 to Ford Vlahos, and leased to Hayes International (probably as Herc Airlift) for use by US Defense Nuclear Agency. Reverted to Ford for Sudan operation in JUL 1984, stored in Athens (Greece) in 1986, then reported impounded in 'African Cargo' markings in Florida by 1989. Allegedly a shady record, making frequent trips to Nicaragua and Colombia. It was broken up for spares by Zotti Group Aviation, at Fort Lauderdale, FL, in DEC 1997.

A97-215 in the US as 'Herc Airlift Corp' N4469P c1987

The Australian Remainders

Although we grew tired of seeing the deteriorating C-130As sitting out in the elements at RAAF Laverton – and it is unbelievable that so many of them survived for future airworthiness – only three eventually remained in Australia, of which one survives (albeit outside) at the RAAF Museum.

A97-214 RAAF MUSEUM, POINT COOK

Although allocated the Global reg N2268N in MAY 1978, A97-214 remained at Laverton. Allocated the RAAF Museum in 1990, it was trucked to Point Cook in MAY 1994,[59] where it is a current outside display with a C-130E and C-130H.

RAAF Museum: A97-214 spruced up in NOV 2000 for the arrival of C-130E A97-160

A97-209 AMTDU, RICHMOND

Allocated Global registration N2267P in MAY 1978, A97-209 remained at Richmond for Air Movements Training and Development Unit (AMTDU) loadmaster training. It was destroyed in a high wind storm in DEC 2001 and scrapped.

AMTDU: A97-209 as a training aid in C-130E colours, and with grey colours wrecked in DEC 2001 by a freak storm

A97-205 ARMY, HOLSWORTHY

Global Jet allotment N22660 MAY 1978, then N205FA but cancelled in MAY 1990.[60] Remaining at Laverton as a hulk in 1989, it then was transported to Holsworthy NSW for army training, apparently replaced in MAR 2000 by A97-172.

A97-205 at Laverton in MAR 1989 before dispatch to Holsworthy

MISCELLANEOUS RAAF APPLICATIONS OF DAYGLO

Canberra

Apart from the training aircraft covered already in this instalment, another example of dayglo for trainers was the two Canberra T.4s at CFS at RAAF East Sale – A84-501 and A84-502.[61] They were both apparently painted with dayglo by GAF Avalon over 1961-62, and operated at CFS over 1962-63. When withdrawn from training, they were flown to 1AD for storage at RAAF Laverton in FEB 1964.[62]

Meteor

At least two A77- numbered Meteors are known to have carried dayglo for Edinburgh/Woomera operations – the F.8 A77-510 (c1960 before conversion to a U.21A drone), and T.7 A77-705, see our instalment on the Meteor.[63]

Army Daylo

The Army also used dayglo to provide high visibility to their gloss olive-drab low visibility Sioux, Cessna 180s, Porters, Kiowas and Nomads. Somewhat ironic using “hi-viz” on camouflage, but that’s the constraint of peacetime operation! These schemes will be covered in the future.

Other Dayglo Examples

Not to be confused dayglo was the RAAF Antarctic Flight's use of 'International Orange', Beaver A95-202 did trial the application of dayglo on its empennage during its operation at Mawson Base in 1958, and soon badly faded. The RAAF operations in the Antarctic will provide the next subject in this series – the RAAF/ANARE Austers, Beavers and Dakota.

DHC-3 Otter

Not really a "Silver Transport Aircraft with Dayglo", but qualifying under "Miscellaneous RAAF Application", were the two Air Trials Unit (ATU) Otters, operated by the RAAF over 1961-1967.

The scheme of both A100-390 (c/n 390) and A100-392 (c/n 392) was white overall, with a black anti-glare panel extending from the cockpit along the engine cowl.

On delivery in FEB 1961, kangaroo roundels were carried on the fuselage, and RAF-style Type-D roundels on the mainplanes, and corresponding broad tail flashes marked on the fin.

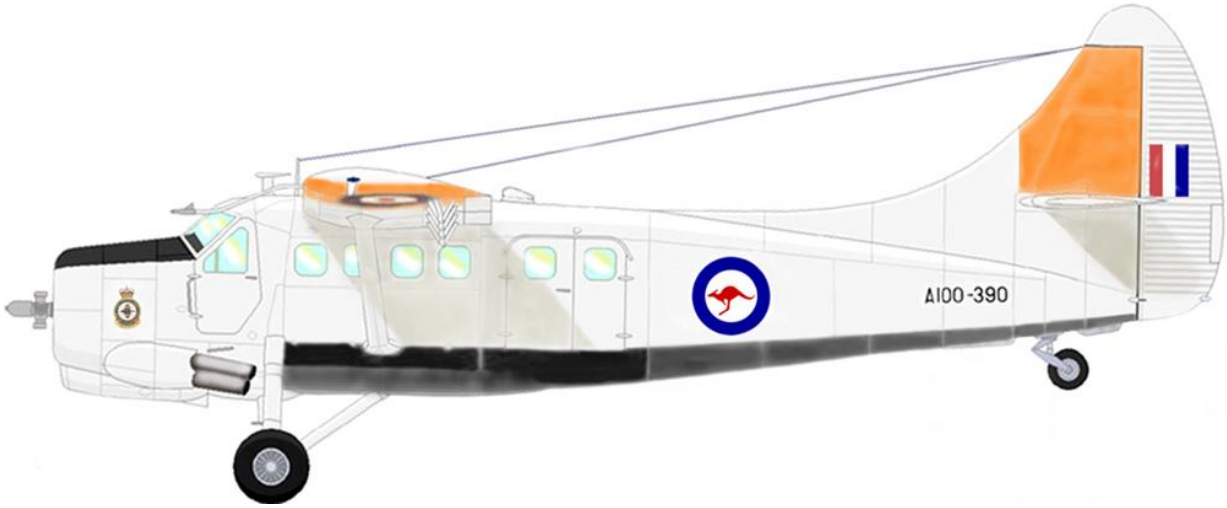
Dayglo appears to have been added to the ATU Otters during 'E' Servicing by Maintenance SQN EDN from late 1962, in line with the painting of dayglo on the Freighters. A100-390 underwent 'E' Serv over SEP-NOV 1962; A100-392 over NOV 1962-FEB 1963.

Therefore, by early 1963 both aircraft had been marked in dayglo. This comprised a dayglo fin, the upper and lower outer wing panels, and the tailplanes with elevators remaining white. To accommodate the dayglo fin, the tricolour was moved back to the rudder and proportions changed to a thinner flash.

Probably at the same time the black undersurfaces were painted black, extending from the engine cooling gills to aft of the passenger access door, and to the base of the rudder. The ATU badge transfer was added to each side central panel on the engine cowl.

DHC-3 OTTER No.1 AIR TRIALS UNIT 1962-1967

A100-392 soon after delivery in 1961 with 1ATU, before the application of dayglo. Kangaroo fuselage roundels, Type-D mainplane roundels, wide national flash on fin, all-over white with black anti-glare above the nose.



A100-390 in FEB 1965, after dayglo was applied to both Otters from early 1963. A narrower fin flash moved aft to rudder to accommodate the dayglo fin, dayglo on mainplanes and tailplane, nose ATU badge on both sides.

Colourised image of A100-390 at RAAF Edinburgh FEB 1965

Both Otters were withdrawn from ATU service in APR 1967, as the aircraft were handed over to WRE within the Dept of Supply, with -390 becoming **VH-UPL** and -392 **VH-UPM** (and probably still carried dayglo until that date). Operation was then contracted to Short Bros, with both exported to Canada in AUG 1980 as C-GSYR and C-GSYX.

The End of Dayglo

The Metropolitans, requiring a highly polished VIP finish, dispensed with dayglo in 1963; the C-130A had dayglo removed over 1964-1965; the Bristol Freighter, employed in Woomera Range support, retained its dayglo until withdrawn from service in 1967; and generally Dakota trainers/transports kept dayglo until 1969. The ARDU calibration Dakotas (below) retained dayglo until 1979 and with the Vampire and Winjeel trainers withdrawn – were the last use of dayglo by RAAF aircraft.

Almost dayglo's last hurrah 1975 *– ARDU calibration Dakotas A65-95 (leader), A65-78 (stbd) and A65-114 (port) over Melbourne's Albert Park on 14 MAR 1975. The new green rudder design had been introduced in NOV 1974.*[64] *ARDU moved from Laverton to Edinburgh in DEC 1976.*

While most RAAF Dakotas had been offered for disposal from 1969, the Dakota was the last RAAF aircraft marked in dayglo, retained by these ARDU calibration aircraft until 1979.

SQUADRON MARKINGS OF THE A.F.C.

by John Bennett 2019

THE OPERATIONAL UNITS

There was a recent query regarding AFC unit markings on the *adf-serials* Message Board. This short article will address the markings of the four AFC operational squadrons – 1 to 4 SQNs AFC (originally 67, 68, 69 and 71 SQNS RFC) – and how squadron markings were introduced to the RFC in 1916, flowing on to the Australian squadrons from 1917. The coverage of the more colourful and flamboyant unit markings of our four training squadrons that formed the 1st Australian Training Wing, under LTCOL Oswald Watt in Gloucestershire, will be covered in a future instalment.

Introduction of Squadron Markings

From late 1914, the RFC adopted the circular red/white/blue roundel, or cockade, as a national marking. This was similar to the French marking, but reversed with the blue ring outermost. RFC HQ fielded this suggestion to the French on 29 OCT 1914, and then implemented the new marking on 11 DEC 1914.[65]

The RFC then realised by the spring of 1916 that with the increase in B.E.2 squadrons in France, some form of marking was required to identify the individual units. The markings were introduced from 23 APR 1916, and were in the form of various combinations of bars, circles, squares and similar devices.[66] These were authorised for various type of aircraft, and were intended to be carried on every aeroplane in each specified squadron. This initial directive, repeated below for 2SQN RFC, gave an example of the allocated marking to each of twelve B.E.2 squadrons.[67] The markings were to be applied in black on clear-doped machines, or white on P.C.10 camouflage. A summary of these first markings specified in this APR 1916 directive explains the marking positioning and variations. From 22 MAR 1918, with the big German Spring offensive, all reconnaissance squadrons were directed to paint out their unit markings in an effort to confuse the enemy with regard the Corps they supported, however fighter squadrons could retain their markings.

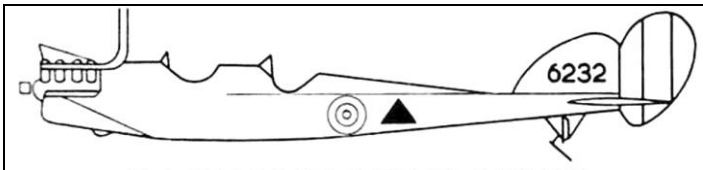
Unit	Marking	Details
2 SQN RFC	Triangle, per CRFC 1693 G of 23 APR 1916 (below)	Painted behind roundel. Changed 26 AUG 1917 to white horizontal band along top edge of fuselage side, then changed to white zig-zag. Discontinued from 22 MAR 1918.
4 SQN RFC	Vertical bar	In front of roundel; discontinued from 22 MAR 1918.
5 SQN RFC	Two bands around fuselage	One in front of roundel, one in front of tailplane; discontinued from 22 MAR 1918.
6 SQN RFC	Three vertical bars	One either side of roundel, one in front of tailplane; discontinued from 22 MAR 1918.
7 SQN RFC	Two vertical bars	Immediately in front of tailplane; discontinued from 22 MAR 1918.
8 SQN RFC	Long horizontal bar	Along top edge of fuselage side; discontinued from 22 MAR 1918.
9 SQN RFC	Vertical band	Behind roundel, about 12”-15” wide; discontinued 22 MAR 1918.
10 SQN RFC	Disc	Behind roundel. Changed 26 AUG 1917, long bar along the bottom edge of side, full-half fuselage length. Discontinued 22 MAR 1918.
12 SQN RFC	Horizontal bar along top side of fuselage	Bar immediately below the top longeron. Changed 26 AUG 1917 to horizontal band along bottom sides of fuselage.
13 SQN RFC	Narrow horizontal bar along centre of fuselage	Ran from pilot’s cockpit to the tail; discontinued from 22 MAR 1918.
15 SQN RFC	Vertical band	In front of tailplane; discontinued from 22 MAR 1918.
16 SQN RFC	Two bands around fuselage	One band either side of roundel; discontinued from 22 MAR 1918.

Initial Allocation of RFC Squadron Markings APR 1916 [68]

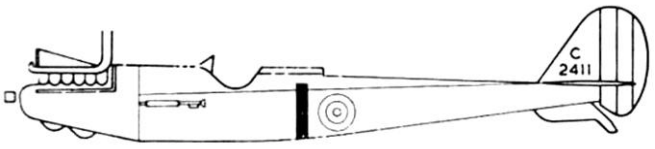
These markings are illustrated below as they developed in 1917. It was interesting that markings were not considered for all aeroplane types. For instance, the OCs of both 18 and 25SQNs operating the F.E.2b contacted RFC HQ suggesting the painting of coloured triangles on the nacelles of their aircraft, but were rebuffed with the comment “this is unnecessary as the F.E.s are distinct enough!”.[69] Several D.H.9 units queried whether they could apply some form of squadron marking, to which HQ replied they could “as long as it was small”.[70]

Initial Allocation of RFC Squadron Markings

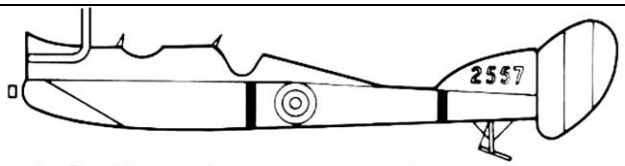
The following illustrations of these early RFC squadron markings are from the definitive works on this subject, *Aircraft Camouflage and Markings 1907-1954* [71] and *Aircraft Markings of the World 1912-1957.*[72]



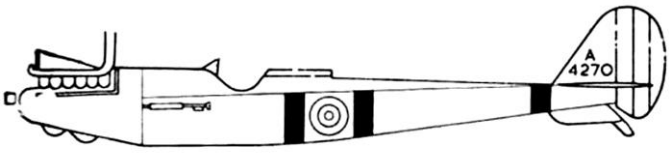
No.2. SQN. B.E.2.E JANUARY-JUNE 1917.



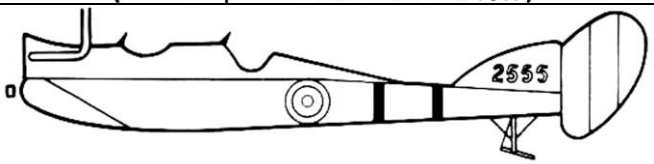
No.4.SQN. R.E.8. MAY 1917-MARCH 1918.



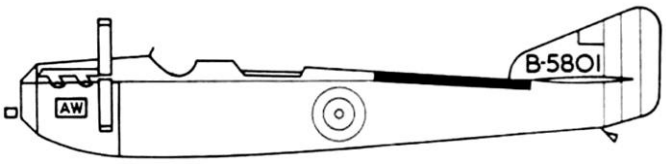
No.5 SQN. BE2 c.d.e. APRIL 1916 – MARCH 1918
(RE8s replaced BEs from mid 1917)



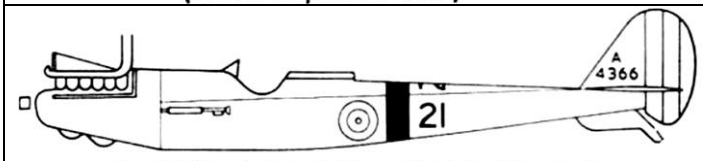
No.6.SQN. R.E.8 APRIL 1917-MARCH 1918.



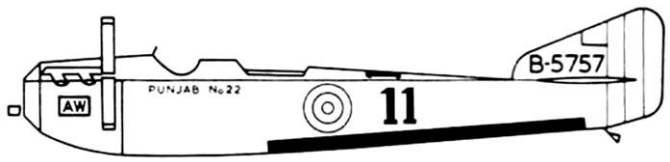
No.7 SQN. BE2 c.d.e. APRIL 1916 – DEC 1917
(RE8s replaced BEs)



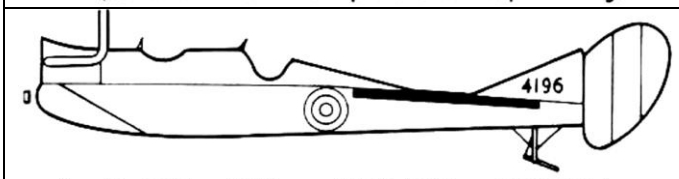
No.8.SQN. A.W.F. K.8. 1918.



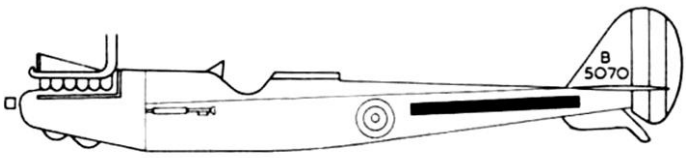
No.9 SQN.R.E.8. APRIL 1917-MARCH 1918.
(Note that '21' was repeated on top decking)



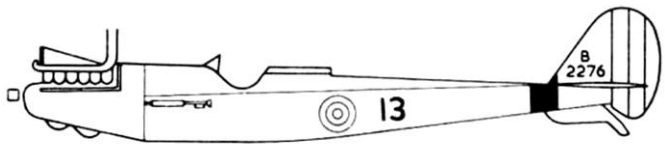
No.10. SQN. A.W.F.K.8. JULY 1917-MARCH 1918.



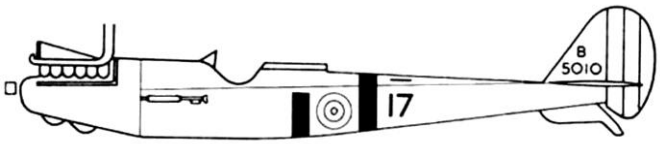
No.12 SQN. BE2c APRIL 1916 – JULY 1916
(later bar was dropped to bottom of fuselage)



No.13.SQN. R.E.8 APRIL 1917-MARCH 1918.



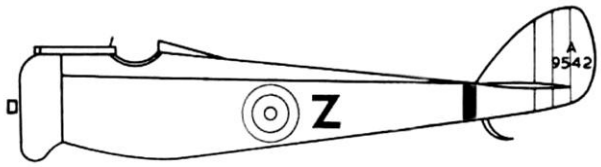
No.15. SQN. R.E.8 JUNE 1917-MARCH 1918.



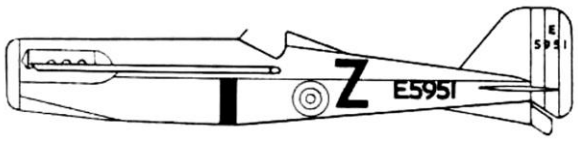
No.16. SQN. R.E.8 MAY 1917-MARCH 1918.

AFC Squadron Markings, Western Front

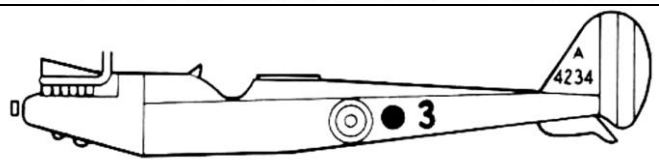
These references also provide AFC markings that were later allocated to the Australian units by RFC HQ after SEP 1917.



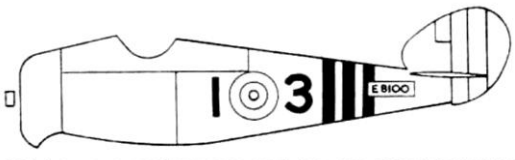
No.68.SQN.(No.2.A.F.C.) D.H.5. OCTOBER-DECEMBER 1917.



No.68 SQN.(No.2.A.F.C.) S.E.5 A. APRIL- NOVEMBER 1918.



No.3 (A.F.C.) SQN. RE8 SEPT 1917 – MARCH 1918



No.71.SQN.(No.4. A.F.C.)SNIPE ARMY OF OCCUPATION 1919.

Actually 70 SQN RAF, when 4AFC took over their Snipes at Bickendorf in Germany

Other markings applied from SEP 1917 were Flight markings, i.e. letters or numbers to identify an individual aeroplane within an AFC squadron, and thereby also indicating the Flight within the squadron. Typically the letters A to F would designate 'A' Flight aeroplanes (in a six aircraft Flight, later increased in fighter units to eight aircraft), numbers 1 to 6 designated 'B' Flight, and letters N to S (or in many cases U to Z) for 'C' Flight. However, this did vary.

Australian Squadrons

Australia's first full aviation unit was arrived as the 1st Squadron AFC in Egypt in APR 1916, and this was renumbered in the British unit sequence as 67 Squadron RFC in SEP 1916, then in FEB 1918 became 1SQN AFC.[73] This unit flew for the duration of the war in Egypt and in the Palestine campaign, and did not have any distinguishing unit markings on its aircraft.

A second AFC squadron was formed at Kantara in Egypt in SEP 1916 as 68SQN RFC. Coincidentally, another "second squadron" raised at Point Cook was leaving Melbourne for England as the "2nd Squadron AFC", however on arrival in DEC 1916 this third unit became 69SQN. By OCT 1916, any confusion in squadron numbering was largely resolved when a new unit formed at Point Cook departed Melbourne as the "4th Squadron AFC".[74] On 4 JAN 1918, the four squadrons were authorised to adopt the uniquely Australian AFC unit identities.

Unit	Formation	RFC Title	Implementation of 4 JAN 1918 Authority
1 SQN AFC	1st Sqn Point Cook, 6 JAN 1916	67 SQN 20 SEP 1916	No.1 SQN AFC, FEB 1918
2 SQN AFC	2nd Sqn Kantara, 20 SEP 1916	68 SQN 20 SEP1916	No.2 SQN AFC, JAN 1918
3 SQN AFC	2nd Sqn Point Cook, 19 SEP 1916	69 SQN 28 DEC 1916	No.3 SQN AFC, JAN 1918
4 SQN AFC	4th Sqn Point Cook, 25 OCT 1916	71 SQN 27 MAR 1917	No.4 SQN AFC, JAN 1918

Formation of the AFC Operational Squadrons [75]

In France, the first Australian squadron to the Front was 69SQN, its 18 R.E.8s crossing to Savy on 9 SEP 1917, having been delayed in Kent by bad weather.[76] 68SQN was next, its D.H.5 scouts making the crossing from England to St Omer on 21 SEP 1917 which was the first time that a whole unit of the RFC was able to deploy overseas in one day – this one-day deployment to France is believed to be a record they held to the conclusion of hostilities.[77] HQ RFC issued the directive on 19 SEP 1917 specifying the squadron markings for 68 and 69 Squadrons. By this stage of course, aircraft finish was P.C.10 camouflage, so squadron markings were applied in white. 71SQN was next two months later, with its Camels crossing on 19 DEC 1917.[78] RFC HQ allocated the squadron marking on 5 NOV 1917.

R.E.8 B5890/N was on 69SQN 'C' Flight from OCT 1917 until wrecked in a crash on 15 MAR 1918

Unit	Marking	Details
68 SQN RFC / 2AFC	White band around fuselage	Just in front of tailplane. Changed to white boomerang with S.E.5a, and 22 MAR 1918 to single white bar ahead of cockpit.
69 SQN RFC / 3AFC	White disc	Behind roundel; discontinued from 22 MAR 1918.
71 SQN RFC / 4AFC	White boomerang	Behind roundel; 22 MAR 1918 changed to a single white bar ahead of roundel.

Allocation of AFC Squadron Markings [79]

The original 68SQN marking on the D.H.5 was a white band around the rear fuselage, but upon re-equipping with the S.E.5a in JAN 1918 this was changed to an appropriate boomerang marking aft of the fuselage roundel. This just preceded the change of unit identity to 2AFC. Also at this stage, 4AFC was operating Camels, and had already initiated the boomerang marking, with subtle variations in its positioning on the side of the fuselage.

D.H.5 A9449/1 was a 68SQN 'B' Flight from OCT 1917 until DEC 1917, when replaced by the S.E.5a

Camel B7412/Y arrived on 4AFC 'C' Flight in MAR 1918, but was crashed the following month

While both 2AFC and 4AFC used the white boomerang fuselage marking, this changed from 22 MAR 1918 for both units – this then became a white vertical bar in front of the roundel, in the case of 2AFC below the cockpit.

Flight Letter Markings

Each Squadron had three flights of six aircraft, and aircraft within the Flight were marked individually. In MAR 1918 4AFC's strength was raised to eight aircraft per flight. Individual markings were repeated on the upper mainplane for both 2AFC and 4AFC.[80]

68 Squadron / 2AFC. With the D.H.5, Flight allocations were 'A' Flt A-F, B Flt 1-6, and C Flt U-Z, which were all marked behind roundel. Equipping with the S.E.5a from JAN 1918, and the codes remained the same as there was no increase from 18 aeroplanes (although the letter "T" was introduced at least twice[81]), and as well 2AFC adopted the boomerang as the Squadron marking behind the roundel. It has been speculated the positioning of the boomerang denoted the Flight (i.e. if the boomerang was higher or lower in relation to the roundel), or that 'B' Flight had the number marked on the nose[82] – these contentions are not supported by existing photography. The

image of S.E.5a C9539/V in MAR 1918 is fairly typical of the markings on all Flights over JAN-MAR before the adoption of the white vertical bar. These variations will be considered in future instalments of squadron histories.

C9539/V of 4AFC 'C' Flight after a landing incident at Savy in MAR 1918 *[AWM E1882, colourised by Benjamin Thomas]*

69 Squadron / 3AFC. 'A' Flt A-F, B Flt G-M, and C Flt N-S – letters marked behind roundel. After the white disc was deleted from MAR 1918, the letter marking format remained the same.

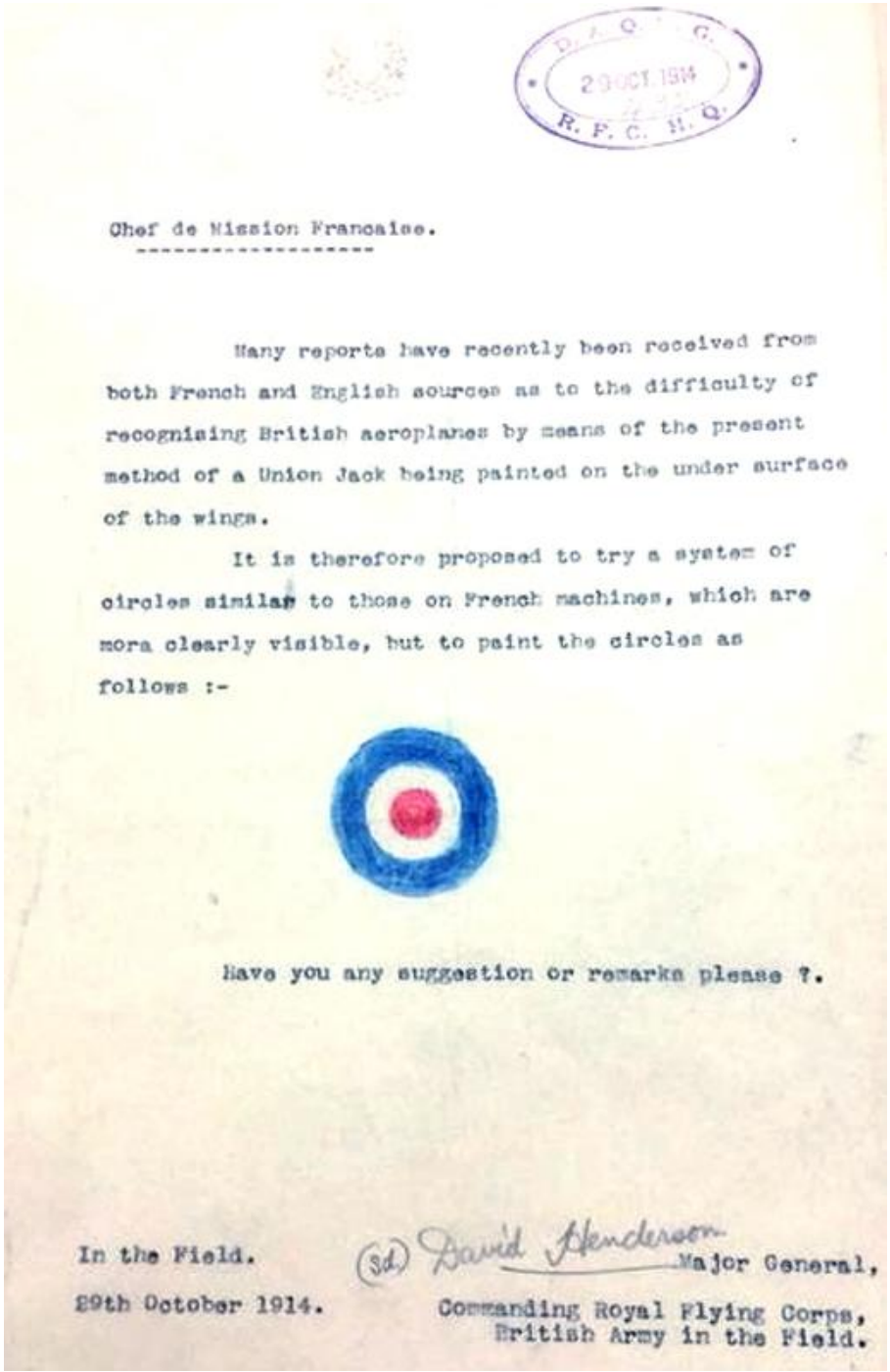
71 Squadron / 4AFC. 'A' Flt A-F (later A-H), B Flt 1-6 (later 1-8), and C Flt U-Z (later S-Z later) – 'later' refers to the increase in establishment in MAR 1918 from 18 to 24 aeroplanes.[83] The Squadron boomerang was marked behind the roundel and on the turtle decking (i.e. behind the cockpit).[84] The individual letter/number was marked ahead of the roundel. When the white bar was introduced to 4AFC in MAR 1918, it was marked ahead of roundel so the letter was marked behind the roundel. When 4AFC received its Sopwith Snipes in OCT 1918 – the second unit in France to be equipped[85] – unit markings remained the same, but some 70SQN Snipes at Bickendorf were absorbed.

S.E.5a E5757/1 on 2AFC 'B' Flight over OCT 1918-FEB 1919, with the white bar allocated to 2AFC and 4AFC

Serial Numbering

Manufacturers had their own style of serial number marking. Sopwith's from 1913 placed the number in a white rectangle; Airco (maker of de Havilland designs) placed it across two of the rudder stripes, whereas most of the other firms would centre it across all three stripes; Avro marked the prefix letter half the height of the numbers; the Royal Aircraft Factory introduced an apostrophe between the prefix letter and the number; Bristol used a hyphen between the letter and the number; Westland placed a full stop, as did other manufacturers.[86] The maker of the 2AFC S.E.5a E5757 (above) was the Austin Motor Company of Birmingham which generally marked serial numbers in white on the fin, but ***from mid-1918 there was a degree of standardisation*** when regulations decreed serials would be in white on the rear fuselage ***and*** in black on the rudder striping, where practicable.[87]

RFC LETTER in October 1914 for the adoption of the roundel



D. A. Q. G. 29 OCT 1914 R. F. C. H. Q.

Chef de Mission Francaise.

Many reports have recently been received from both French and English sources as to the difficulty of recognising British aeroplanes by means of the present method of a Union Jack being painted on the under surface of the wings.

It is therefore proposed to try a system of circles similar to those on French machines, which are more clearly visible, but to paint the circles as follows :-

Have you any suggestion or remarks please ?.

In the Field.
29th October 1914.

(Sd) David Henderson Major General,
Commanding Royal Flying Corps,
British Army in the Field.

[source: https://www.greatwarforum.org]

Letter to French HQ from MAJGEN David Henderson, Commanding RFC in the Field, of 29 OCT 1914. This roundel (or "circle") was promulgated by the RFC on 11 DEC 1914; rudder striping in mid-1915.

THE ORIGINAL RFC SQUADRON MARKING DIRECTIVE 23 APR 1916

C.R.F.C. 1693 (G).

~~No. 1 A.D.~~
~~No. 2 A.D.~~
"
No. 21 Squadron.

Herewith a copy of squadron distinctive marks to be painted in black on machines of B.E.2c. squadrons. *The painting will be done by squadrons.*

Lieut-Colonel.
General Staff.

H.Q.R.F.C.
23rd April, 1916.

No. 2 Squadron.

This document from the *RFC HQ file CRFC 1693 G series is dated 23 APR 1916*, and details to 1AD and 2AD, and to 2SQN RFC, the details of the 2SQN marking for that Unit's B.E.2c aeroplanes. A hand-written addition specifies "The painting will be done by squadrons".

68 and 69 SQUADRON MARKINGS 19 SEP 1917

C.R.F.C. 1693 G.

1st Brigade.
3rd Brigade.
9th Wing.

2nd Brigade.)
4th Brigade.)
5th Brigade.) For information.
No. 1 A.D.)
No. 2 A.D.)
"Q", H.Q.,R.F.C.)

Reference the table attached to my C.R.F.C. 1693 G. of the 26th ultimo, new squadrons are allotted markings as follows:-

No. 84 Squadron		Behind national marking.
No. 69 Squadron		Behind national marking.
No. 68 Squadron		Just in front of tail planes.

Adv.H.Q.,R.F.C.
19th September,1917.

R.P. Barton, Captain.
General Staff.

This document from the *RFC HQ file CRFC 1693 G series is dated 19 SEP 1916*,[88] and details to Brigades and Depots the details of the new markings introduced for 84SQN RFC and the two Australian units recently arrived at the Front, 68 and 69 Squadrons. Below is the white disc applied to a 68SQN R.E.8.

[AWM E01178]

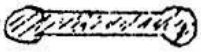
69 SQN R.E.8 coded '13' (probably A4759, which became 'N') at Savy on 22 OCT 1917

71 SQUADRON MARKINGS 5 NOV 1917

C.R.F.C.1693.G.

1st Brigade.	41st Wing.
2nd Brigade.	No. 1 A.D.
3rd Brigade.	No. 2 A.D.
4th Brigade.	A.
5th Brigade.	Q.
9th Wing.	Adv. G.

Reference the list of Squadron markings attached to C.R.F.C.1693.G. dated 26th August, 1917, the following is a further list of markings allotted to Squadrons equipped with new machines or proceeding overseas during the month of November :-

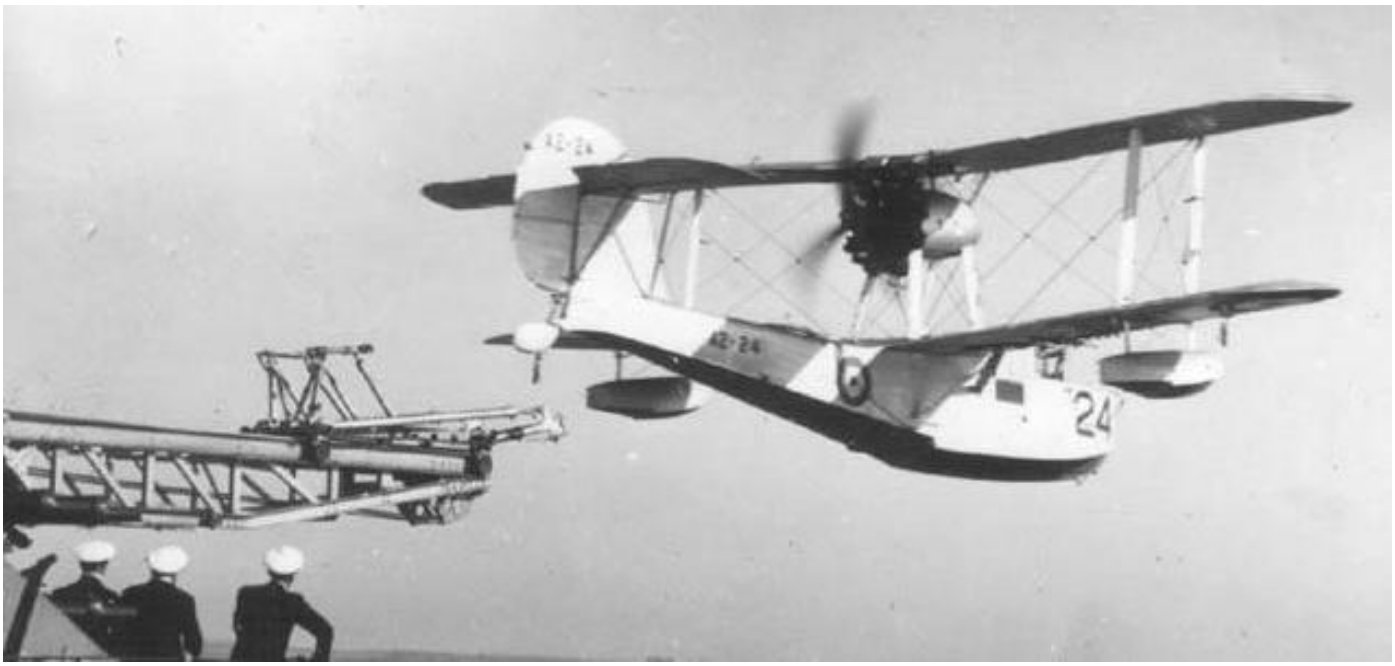
No. 49 Squadron	De Hav. 4.		Behind national markings.
No. 82 Squadron	A.W.B.		Behind national markings.
No. 27 Squadron	De Hav. 4.		Behind national markings.
No. 71 Squadron	Sop. Camel.		Behind national markings.
No. 66 Squadron	Sop. Camel		Vertical line in front of national markings, horizontal line along centre of sides of fuselage behind national markings.

Adv. H.Q., R.F.C.
5th November, 1917.

A.B. Hinton
Captain,
General Staff.

This document, from *RFC HQ file CRFC 1693 G series is dated 5 NOV 1917*, details to the Brigades and Depots the details of the new markings introduced for Nos. 27, 49, 66 and 82 SQNs RFC, and the latest Australian unit about to arrive at the Front, 71 Squadron. Although this is shown as a crescent, it was in fact a boomerang – retained when 71SQN became 4AFC, and also adopted by 68SQN/2AFC on S.E.5as.

<u>Replacing the RAAF Seagulls:</u> 1940-1941: Ducks, String Bags & Gulls galore in all shapes. Gordon R Birkett@2017



A2-24 catapulted: Photo Jack Ryan

The supply of Walrus replacements for RAAF A2 Seagull and Walrus lost through attrition during the first two years of war was compounded by urgent requirements to replace the Royal Navy and RAF Walrus losses up to 1941, first. The single source production from a stretched single company; Supermarine, ensured that it was difficult to maintain the attrition supply. Saunders-Roe Ltd would be tasked with opening a second production line for Walrus, with the first delivered in May 1941.

Against a 1940 RAAF Request for shipment, per Overseas Indent 969, was a recommendation for the purchase of some twenty-seven new Fleet Co-operation type aircraft. These were to be purchased to replace both Seagull and Walrus types in RAAF Service. A new type under consideration was the Air Ministry Spec 12/40, then being sought[89].

A intermediate type, the Sea Otter, also under development, was not due to reach full production (of fifteen aircraft a month), until late 1941 or early 1942 at best, with the RAAF to wait in line until that full rate was established before it was to receive any. Meanwhile several preloved and new attrition aircraft, Walruses K8542 and L2177, which were loaned by the RN in 1940 were paid for (11/01/41) These two aircraft were embarked on HMAS Sydney during 1940, for replacement of A2-21. K8542 itself was returned and condemned in September 1940 and replaced by L2177.

A further nine during the 1939-1941 period, L2171*, L2243*, L2247, L2293, L2318, L2319[90], L2321*, L2322 and L2327 had been delivered, with those loaned *having been returned, including K8542.

In August 1941, only four Seagull/Walrus aircraft were assigned to four RAN Ships (Cruisers HMAS Australia and HMAS Canberra, with A2-18 and L2322 respectively, and Armed Merchant Ships HMAS Manoora and HMAS Westralia, with A2-1 and A2-13 respectively. [91]

One further example was based sometimes at Horn Island with another at Karumba in the Gulf of Carpentaria, with one each for Anti-submarine Patrols in the areas of Cairns and the Grafton Passage, with a further two being used for training. With a total of only nineteen Seagull/Walrus aircraft being held on strength at this time, it was considered that a purchase of a new type would be required in adequate in numbers for requirements.

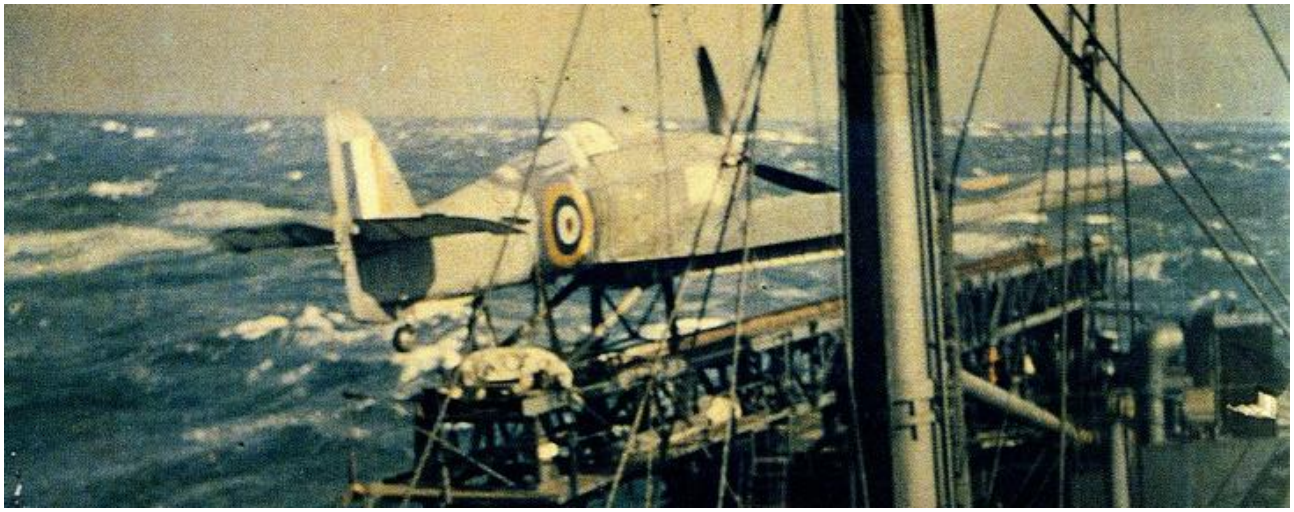
It was tended that this could be rectified by the following options from April 1941:

- Obtaining twelve Fairey Swordfish, to be fitted with floats. Advice from the Ministry and Admiralty advised that the use of such was only a temporary measure when Walrus aircraft were not available in Battleships, not Cruisers. They were also considered not as sea worthy in use. However they did advise it was feasible, but the Cruiser catapults (Type E III) would have to be modified to take the two floats, and that drawings of conversions were available.

  They did remark that the carriage of a Torpedo on the Swordfish was impractical given the lack of a Hanger for preparations of loading. They were not Amphibian. *(Mk1s were designed for the RN/RAN Catapult Specifications for Battleships and Cruisers in service, but a funny thing happened in Fremantle in early 1942. Did we actually get Six Swordfish Mk1 Float planes by order or by accident?* [92]

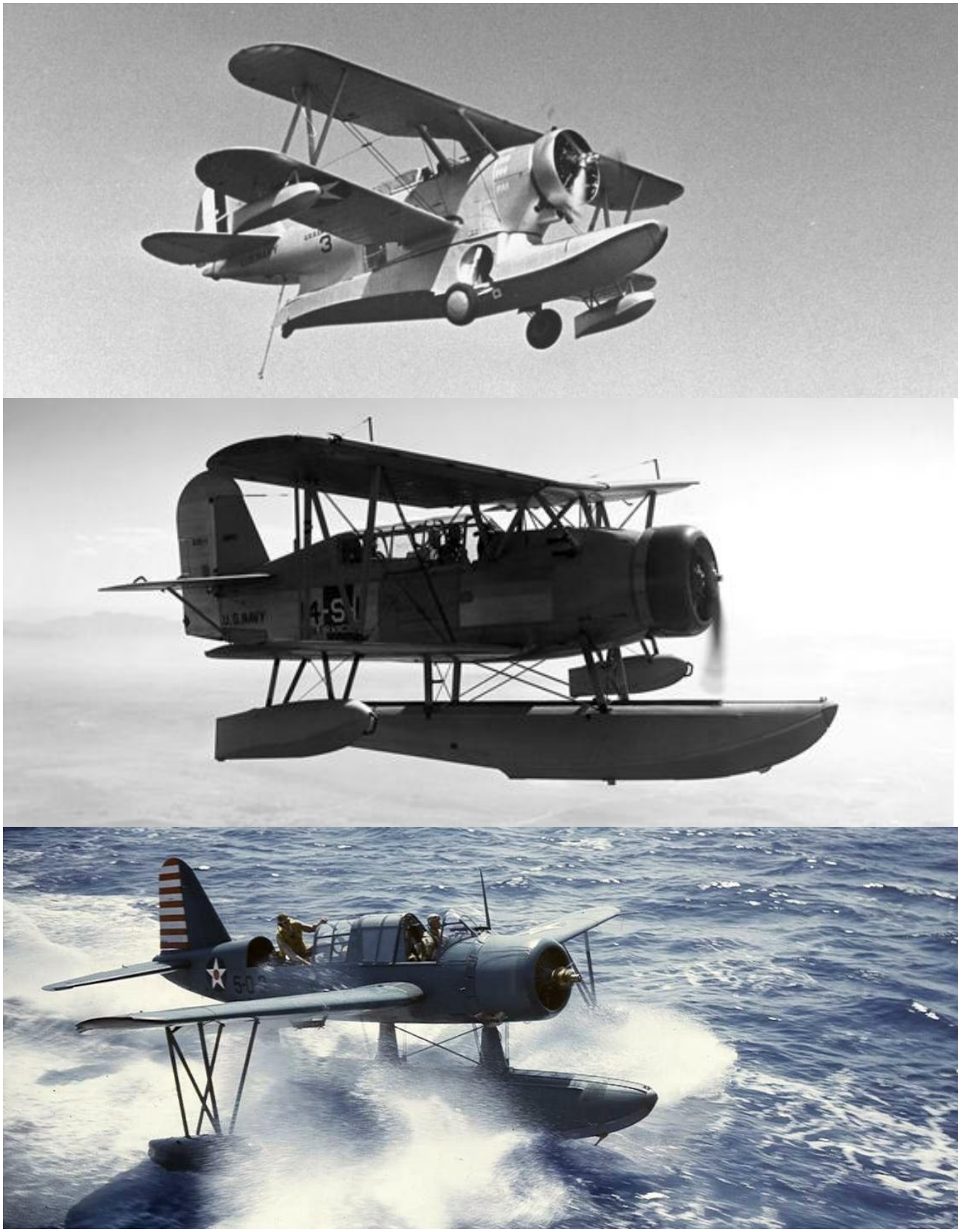
There were also three flights of Swordfish equipped with floats, for use off catapult-equipped warships. Pictured is HMS Malaya's Swordfish Float Plane, in October 1941

- Consideration of the Minister of Aircraft Production, Lord Beaverbrook, April 1941 offer to the RAAF of supplying Hurricane Fighters fitted for catapulting, though its use was considered unsuitable for Fleet Co-operation Duties[93]



- additional purchase of some twelve US Navy Aircraft, per types currently under evaluation by a RAAF Technical Team, led by Group Captain Wackett in the US of A at that time. One of the types, the Grumman Model G-15/J2F1 Goose was deemed unsuitable.[94]

- Other types under consideration were the Curtiss SOC-1 Seagull and Vought Sikorsky OS2U-1 Kingfisher, but both were not Amphibian types, nor the latter having folding wings. *Only a year and a half later, <u>all of these types would be in local service, be it USN or RAAF owned or borrowed</u>, though shore based.*[95]



Above Pics: *J2F1 Duck, SOC-1 Seagull and OS2U-1 Kingfisher*

- Wait till the Air Ministry places order for production of Sea Otter which would start its production in November 1941

It would be during the Korean War that the Sea Otter itself would serve on a RAN Ship,..being a Carrier this time, albeit loaned from the RNFAA.

- Maintain seventeen Seagulls for another twelve months till supplies of Walruses resume

Even so, some thirteen Walrus aircraft were requested by the RAAF for delivery for 1942, but only three were dispatched by March 1942 due to the entry of Japan into the war.
These would merely offset only some of the attrition incurred from November 1941 to March 1942. However, supplies resumed from late 1942 and into 1943.

By 1944, the issue was moot; for the aircraft would be withdrawn from the RAN Cruisers as they were considered obsolete and were generally replaced by radar then installed on the RAN Cruisers and by the abundance of land based Catalina coverage.

With the four attached to HMAS Ships in early 1944, one further example was based at Horn Island with another at Karumba in the Gulf of Carpentaria, with one each for Anti-submarine Patrols in the areas of Cairns and the Grafton Passage, with a further two being used for training.

Another twenty-two were held either in maintenance or service, or pending write-off. The Survivors would continue to prove sterling service in Communications and Air Sea Rescue Flights until the arrival suitable replacement types and in the later role, of assigned Catalina ASR Flights in 1945.

The Last Enemy Aircraft shot down by a 452 Squadron RAAF Spitfire.

On the 11th December 1944 452 Squadron RAAF was sent to Morotai, where it was assigned to the 1st Tactical Air Force, to support the Australian operations in Kalimantan, flying mainly ground attack missions and anti-shipping strikes. The ground staffs were sent to Juwata airfield on Tarakan in May 1945 but operations had to wait until the landing field was ready.

On the 11th January, 1942, Juwata Airport was also recorded as part of history, as the place where the first Japanese army fighter aircraft landed in the Netherlands East Indies. The squadron undertook missions against Kelabaken and Simalumong on the 2nd July 1945; further attacks occurred on Tawoa on the 10th July 1945.

A detachment of eleven Spitfires [96]were moved to Sepinggan Strip, Balikpapan, (Under control of 38OBU) on 15th July 1945 and began operations on the 17th July 1945 to support Australian troops there. Regrettably, on landing after the first Sortie on the 17th July 1945, A58-516 QY-E with F/O Gurney, crash landed.

*One of the other pilots was **Flying Officer Jeffrey King Serv#401823** who as a Sgt Pilot previously in 1942, had been posted on the 11th June 1942 to Black Section, "B" Flight 41 Squadron RAF as a NCO Pilot flying Spitfire VBs and participated in fighter coverage during Operation Jubilee, 1-22 August 1942, the Raid on Dieppe. He flew some 19 sorties totalling some 75 .35 Hours on operations.[97]*

He returned to Australia, and after a reintroduction course on Spitfire Mk Vc (T) at 2OTU, started his second tour on operations with 452 Squadron RAAF on the 10th March 1943.

On this second tour, during Darwin Raid#57 (30/06/43), as Red 2,(Wing man for Sqn Ldr MacDonald, Red1) suffered an Oxygen supply issue in Spitfire Vc BS223 (later A58-14) when he attacked one of twenty-three bombers in formation at 26000 feet without observing results as he became unconscious and didn't recover until he was at 14000 feet. Sqn Ldr MacDonald noted during Red 2's attack, heavy return fire from his target.

He was commissioned as a Pilot Officer (CAF) on the 30th June 1943.

On the 11th December 1943, whilst taking off from Strauss Strip (NT) to perform an air test in Spitfire Mk Vc (T) A58-109, he noticed that his tachometer showed only 2800revs and 4lbs of boost. He decided to do a half circuit and land.

On approach, with gear and flaps selected down, he as overshooting thus he raised the landing gear and pushed the throttle to the gate and fully fine pitch in an attempt to go around.

He continued to Hughes Strip instead, noting that his coolant temperature was now at 115degrees. He performed a wheels-up landing. He had not released his belly tank before doing so, thus when belly of aircraft contacted the strip, it burst into flames. The aircraft soon too started to burn. HE got out of the aircraft suffering 2nd degree burns to his left arm. Promoted to Flying Officer on the 1st April 1944 and who now was on his third tour with the same Squadron as a commission Pilot in 1945.

Spitfire A58-109 now perched on a truck, being taken off the strip after its accident.

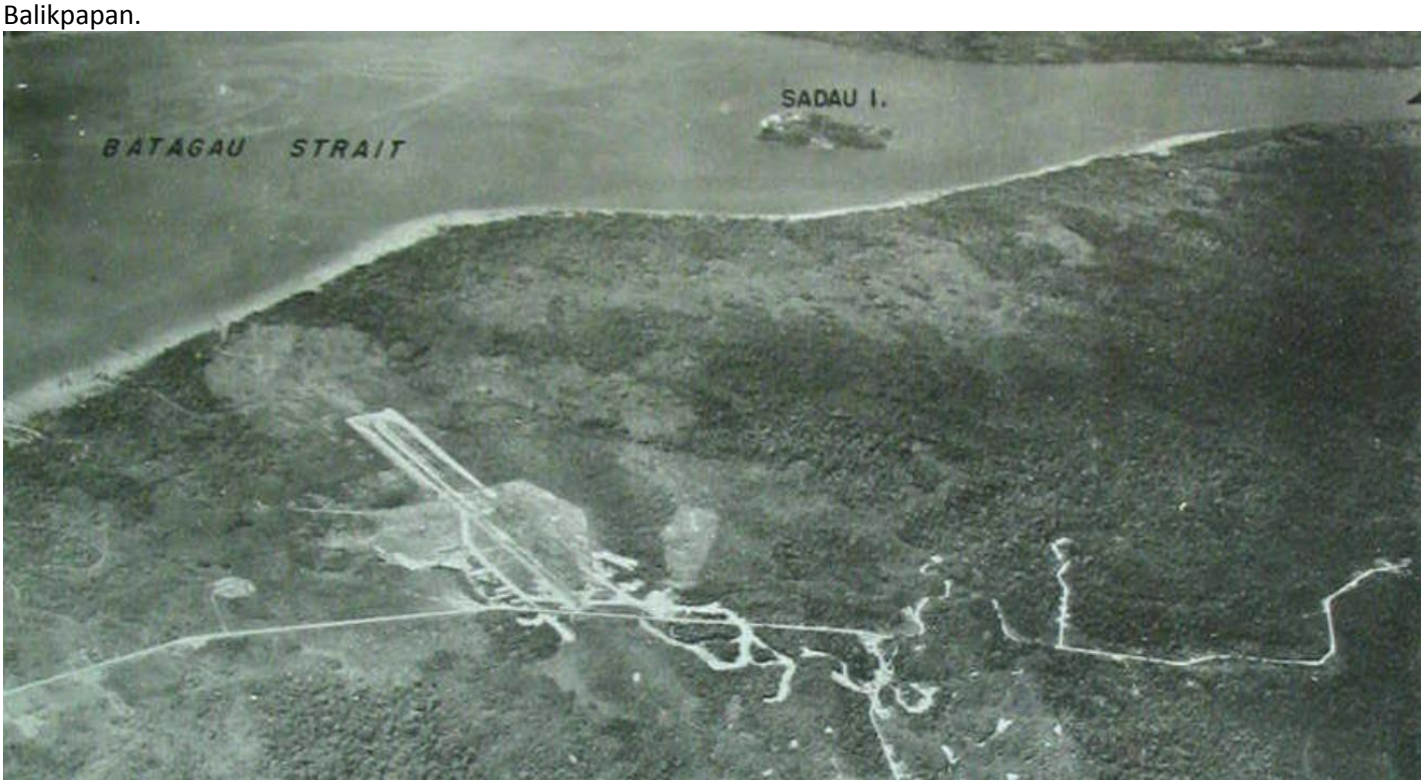
Portrait of Flight Sergeant Jeffrey Cecil King (401823), Spitfire pilot, 452 Squadron, RAAF; North West Area, sitting in a deck chair, reading and smoking in early 1943.AWM

The Last RAAF Intercept of a Japanese Aircraft in WW2

At 0216 Hrs (Local time herein, not Zulu Time)) on the bright moonlight night of the 24th July 1945, No 110 Mobile Fighter Control Unit (110 MFCU) was advised that radar had identified possible enemy contacts, numbering at least ten aircraft inbound to Sepinggan Strip. 110 MFCU contacted the alert the ready room of the detached 452 Squadron RAAF flight by phone, and instructed the duty officer to scramble one aircraft to orbit around base at 20000 feet.

A58-430 QY-V; Red 1

F/O Jeffrey King Serv#401823, call sign Red 1, was airborne at 0220hrs following the flare path lighting of the strip for take-off, and advised control that it was climbing to 18000 feet as directed over Sepinggan Strip, with a cloud base being 5/10th cloud at 5000 feet, waiting for a target vector to intercept bomber contacts inbound to Balikpapan.



Photograph: Aerial of Sepinggan Strip, Balikpapan.

At 0330Hrs, Red 1 finally obtained repeated intercept vectors from the Controller, during which he was at times very close or passing the bogies who had commenced their attack on the strip, without sighting them.
Finally at 20000feet and some 2 miles south of Sepinggan strip, he saw an aircraft at 12 O'clock level with him. The aircraft then appeared to turn west, which times Red 1 followed and commenced a 45 degree beam attack.

At this time the enemy bogey aircraft must have observed him and turned into his attack at a range of 600 yards. His turn continued and when it became apparent that the attack was developing into a head on attack by both aircraft. He fired a two second burst, and the enemy aircraft returned fire from the front. No strikes were observed by Red 1 as the enemy bogey aircraft lost altitude after diving towards the land. It was then lost from view in the dark of the background.

Another duty Spitfire, Hammock Black 1(A58-427/QY-X) flown by F/Lt Keith Colyer Serv#403858, was scrambled at 0356hrs without waiting for the flare path lighting of the strip for take-off. He was ordered to climb on a bearing of 180 degrees to Angels 18 (18000 feet).

Post war, A58-427 at 6AD Storage

At this time, Red 1 heard the controller state that the bogey was illuminated by search lights but he could not sight it. Half a minute later and on a course of 160 degrees and 1000 yards ahead of him, he gained a visual sighting of two glowing exhausts.

In order to silhouette the bogey against the moon, he pulled out to port and lost a little altitude, then commenced an attack 8 o'clock low, pulling in and closing to 6 o'clock level, then opening fire and maintain a continuous 10 second burst from 300 yards down to 50 yards closing with both 20mm cannon and 0.303 machine guns.

The bogey took no evasive actions when the firing commenced, but performed a very slight weaving to starboard, and then quickly regained his original course during the attack.

Strikes by the 20 mm cannon shells that had commenced in the port engine nacelle and pulled through to the fuselage, caused a fire to break out either in the port tanks or engine and fuselage.

The Bogey then went into a steep dive. Red 1 was too close to follow the bogie down as it dived steeply to port, but as he pulled away to starboard and then commenced his dive, sighting the Bogey envelop into flames, and then watched it crash into the sea approximately 7 miles south east of Sepinggan Strip.

At 0415hrs, He advised the Controller of the kill and that he was low on fuel.

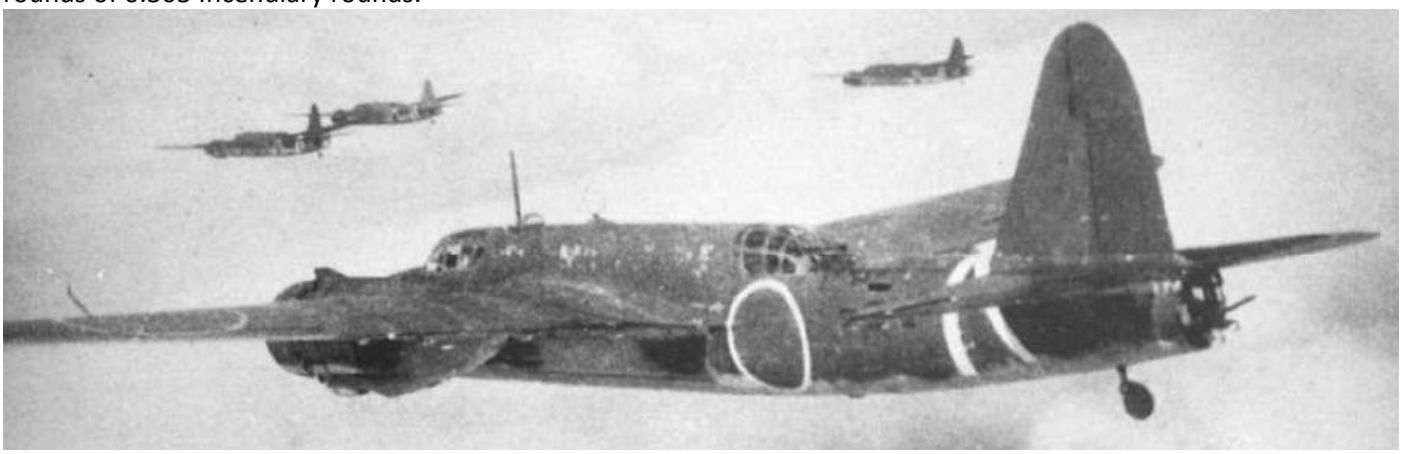
The controller advised him to keep out of the area of operations, but Red1 advised that he was coming in due to fuel, and received permission to pancake, which he did so at 0425hrs.

Confirmed kill of a Nakajima Ki-49-II Type 100 Heavy Bomber Donryu (storm dragon), allied identification "Helen", as provided by eyewitness Gun and searchlight crews, who saw it on fire and impacted approximately 6 miles South South East of Sepinggan strip, confirmed as a kill.

(*In the spring of 1942 an up-engine version was produced, fitted with more powerful Ha-109 engines, and this became the production Army Type 100 Heavy Bomber Model 2 or Ki-49-IIa. The Model 2 also introduced improved armour and self-sealing fuel tanks and was followed by the Ki-49-IIb in which 12.7mm (0.5 in) Ho-103 machine guns replaced three of the 7.7 mm (0.303 in) Type 89 machine guns*)

The detachment remained until the end of the war, flying its last sortie on the 10th August 1945.

Ammunition consumed: 113 rounds of 20mm SAPI, 113 Rounds of 20mm HEI, 504 rounds of 0.303 AP and 336 rounds of 0.303 Incendiary rounds.



ROYAL AUSTRALIAN AIR FORCE

HONOURS AND AWARDS

MENTION IN DESPATCHES

FLYING OFFICER JEFFREY CECIL KING (401823).

CITATION:

Flying Officer KING has seen service in the United Kingdom and completed two operational tours with No.452 Squadron in the Pacific Area, serving at Morotai, Tarakan and Balikpapan.

On the night of 25th July, 1945, at Balikpapan, he carried out a successful interception on a Japanese bomber and shot it down in flames. He has also shared in the destruction of several barges and enemy installations.

His courage and devotion to duty are of the highest order.

24 July — To F/O KING fell the fortune of being the first 452 pilot to make contact with the enemy in the air since 24th December last. During the early hours of the morning indications of a maximum of ten enemy aircraft were plotted by fighter sector and F/O KING made contact on two occasions. His first attack was unsuccessful and the contact lost, but full advantage was taken of the second opportunity and the squadron score moved along when one, probably a Helen, went into the sea in flames. F/LT SOLYER was also airborne but made no contact. M/T along the MENTAWIR Road received attention during the afternoon, three m/t were burnt and one damaged.

430	F/O.KING		240220	240425	Interception. One (probable)HELEN destroyed.	24th July.
636	S/L.BARCLAY		241720	241810	Strafe targets of opportunity N.Maraika River.	RKN 12, 24 July.
619	F/L.BAXTER					
564	F/O.WATSON					
503	F/L.CARMICHAEL.					

Post war, despite trying for a permanent commission, King joined the Citizens Air Force as a General Duties Pilot, with the rank of Flight Lieutenant with a new CAF Serv# O-215028 on the 5th June 1948.

Up to 1953, he was assigned to the Wagga Aero Club at Wagga. These Clubs were entrusted with the training of National Servicemen, Air Training Corps Cadets, General Reservists, University Air Squadron Cadets and some Citizen Air Force Cadets.

Note: Though stated as being A58-430, I believe that this is an earlier QY-V flown in Australia in late 1944 by Sqn Ldr Spence. Mainly due to the Sqn Ldr Pennant and Spinner colour. Why? Up to Mid 1945, A58-430 was QY-M.

A58-430 History

LF.VIII MD341 QY-M/QY-V Rec 2AD ex UK 20/04/44. Issued 457 Sqn RAAF 25/08/44. Rec 2AP ex 2AD enroute 01/09/44. Issued 457Sqn RAAF ex 2AP 19/09/44. Rec 2AD ex 2AP ex 457 Sqn RAAF 28/09/44. Rec 14ARD RP ex 2AD 16/10/44. Issued 22RSU RP ex 14ARD RP 26/01/45. Rec 452Sqn RAAF ex 22RSU RP 10/02/45 and coded QY-M. Accident 10/07/45, when damaged on landing, at "Croydon" Airfield Tarakan. Repaired and recoded QY-V Pilot: W/O C L Swift was not injured. 24/07/45, shot down last enemy aircraft over Balikpapan when flown by F/O Jeffrey Cecil King Serv#401823. Allotted 6AD ex 452 Sqn RAAF for storage 29/10/45. Accident 07/11/45 on landing accident Mokmer PNG during 452 Sqn RAAF ferry to 6AD. Pilot: F/Sgt G D B Cottew not injured. RAAF HQ Approval to Write off per File AFO 19/B/19, 13/02/46.

Curtiss Corner: P-40N-40-CU A29-1161

98

A29-1161: Ordered on USAAF Contract W535-AC34423 Project#41444 as USAAF FY 44-47912.

It was allotted under RAAF Kittyhawk Indent 2270, vis RAF BPC RFDA-322A, Diversion 1197-A, Aus 65 #35 and marked as Mac Air #A29-1538 for the Royal Australian Air Force.

On arrival at 1 Air Depot Laverton Victoria on the 3rd January 1945, it was renumbered by the RAAF as A29-1161 by the 8th January 1945. Received by No 80 Squadron RAAF and coded BU-M on the 13th March 1945. No 80 Squadron RAAF by August 1945, as part of No 78th Fighter Wing was operating at Tarakan. The aircraft was normally flown by F/Lt K Gillard Serv#406933, with F/Sgt Eldred Quinn Serv#417413, flying it regularly as well. F/Sgt Eldred Quinn also flew A29-1163 BU-X and A29-1218 BU-D at times during the August 1945.

He had one prior accident in a Kittyhawk, A29-681, coded BU-L, when on the 15th February 1945 at 1415hrs, the port tyre blew during take-off at Wama Strip, Morotai, causing the aircraft to run off the strip and be extensively damaged.

A29-681 BU-L

On the 9/8/45, F/Sgt Eldred Quinn flew A29-1161 as No 3 in Blue Section on mission Cro-21; the bombing and strafing of enemy positions Sanga Sanga Louise Area (00°.33'South/117°.18' East) While making his first strafing attack from 1500 feet, his a/c was hit by AAA aft of the cowling and causing the engine to catch fire.

Though the pilot managed to complete his attack, then level out, turning to port, he was forced to belly land the a/c, but as it skidded along the ground, it crash into an oil pumping plant, causing both the plant and aircraft to burst into flames on contact.

F/Sgt Eldred Quinn Serv#417413 was posted missing, believed killed, and had the sad title as being one of the last Australian airman to die in WW2.
Just over a month later, post war on 10/09/45, an interrogation by the 79th Wing Intelligence Officer (F/Lt G M Cadden) with the Japanese CO in the Anggana area of the crash, confirmed that the pilot had been killed instantly.
The Japanese led the party to the aircraft wreck site. Destruction of the aircraft was so complete that part numbers or identification of the particular aircraft could be obtained.

The Senior Operations Officer of 79 Wing, who had accompanied F/Lt G M Cadden, Sqn Ldr W Hoddnott, was shown his burial site where his remains were interned, nearby of the crash site.

No Identification discs or personal items were recovered. He was later re-interned at Labuan War Cemetery, Borneo.

As for A29-1161, AMSE Approval to strike off strength, in having crashed in enemy territory, per File#9/16/2835 29/08/45. Allison V1710-99 #53852 written off.

Odd Shots: ADF's Piston Powered Choppers: R5/6's, S51 Dragonflies, Navy Sycamores and Australian Army Light Aircraft Squadron's Bell Sioux.

Interest in obtaining six helicopters for rescue and medical evacuation purposes in the New Guinea campaign was first mentioned in planning in 1943. The model in production was the Sikorsky R-4 which was first successfully operated by the USAAF in Burma in 1944. R-4 Airframes were not available outside the US Armed Forces due to ongoing development and refinement. Those refinements and developments resulted in the larger R-5* and as a later streamlined and improved R-4 Development, the R-6 of 1944.

**The U.S. Army Air Force developed a specification for a large observation helicopter, with greater useful load, endurance, speed, and service ceiling. In response, Sikorsky designed the S-51, what would become the two-seat R-5 helicopter. Sikorsky had, by 1945, actually built about sixty-five R-5s, of various versions, for the USAAF, Navy, and Coast Guard. The XR-5 prototype first flew 18th August 1943. In March 1944 the USAAF ordered 26 YR-5As for service testing, and in February 1945 the first YR-5A was delivered.*

Under the British Munitions Advisory Commission (MAC) Case 228 Aus 10, an order for six R-5 or R-6 helicopters was placed alongside with an RAF Order for one hundred and fifty R-6A Helicopters.

However due to the delays in development and production quantities, the order was adjourned until mid to late 1945. Six Sikorsky R-6As were eventually placed on order with delivery during the second quarter of 1945 for the RAAF, at a cost of £108,000.
RAAF Specified Radio Equipment to be fitted included:

- BC-453 and BC454 Receivers
- BC-457 and BC-696 Transmitters
- BC-455 Receiver stowed in luggage Compartment
- BC-458 transmitter supplied, but not fitted.

With the end of the Second World War, these and other types on order were cancelled.

It would be another two years before the RAAF would receive our first helicopter in the form of our first S-51, A80-1, in 1947.

As delivered in October 1947 to ARDU, and on the next page, company reps take her through her capabilities. Eventually she would serve in No 21 “City of Melbourne” Squadron, CAF from 1951 for only a brief month.

Note: Two “rescued men” sitting on Starboard Undercarriage!

A80-374, like its predicessor, A80-636, served in No 22 “City of Sydney “ Squadron , CAF for a number of years in the early 1950’s before arriving at 2OCU in late 1950’s and later 81 Fighter Wing.

A80-636, before above, and the next page after her accident on the 10th December 1952 as flown by Wg/Cdr D L Wilson Serv# O21924

A80-636, eventually served with No 23 “City of Brisbane” Squadron, CAF.

Our Oddity aircraft would the RAAF’s two Bristol Sycamores , including A91-1 (Originally allotted Serial was A80-2 initially on delivery during 1951). After serving with ARDU initially, it went onto the Air Transport Unit as did A91-2.

The Royal Australian Navy Fleet Air Arm did order and operated a further thirteen Bristol Sycamore HR Mk 50/Mk 51 s. They retained their RAF/RNFAA Serials in RANFAA Service.

Bristol Sycamore HR Mk51 XD656 in hover pre 1957.

Two schemes worn by RANFAA Sycamores pictured above.

Odd Shots Subset:Australian's Army Aviation Afloat, vis Maritime Support in the 1960's.

In 1959 the Australian Army purchased four LSM-1-class Landing Ship Medium (LSM) from the US Navy in Japan. These vessels were veterans of the Pacific Campaigns in World War Two and the Korea War.

They were 62 metres long, with a beam of 10.4 metres and could carry up to 306 tons, including four Centurion Tanks (4 x 52 tons) at a speed of 11-12 knots, with 14 knots max.They served extensively in New Guinea and the South West Pacific and two of them served in Borneo during the confrontation with Indonesia in 1964.

The unit, 32 Small Ship Squadron, was disbanded in early 1972 with the Royal Australian Navy (RAN) to be responsible for all seagoing activities of the Defence Force since. From 1960 to 1970 she performed routine duties in support of the Australian Army, and carried equipment between ports in Australia, New Guinea, Malaysia and New Zealand.

A major role devised in the early 60's was assistance to the Australian Army Survey Corps by the ships through the provision of a maritime support base for survey operations.

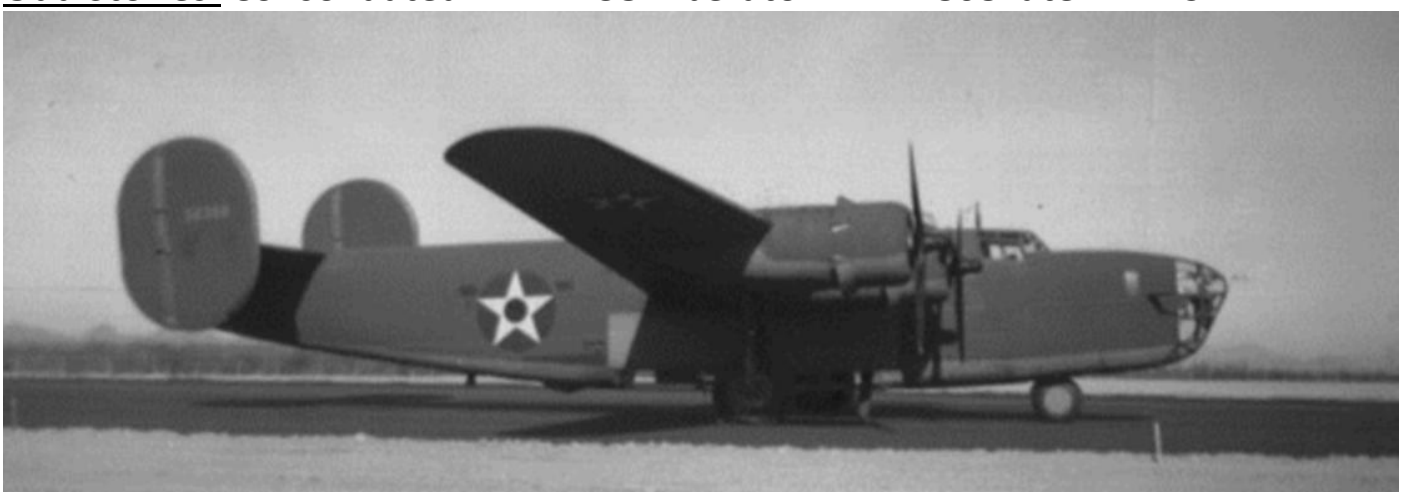
So AV1353 Harry Chauvel and AV1354 Brudenell White during 1963-1964 were fitted with helicopter platforms to increase their capability. Support to Australian Army survey detachments was also provided in Indonesia at various times.

An unidentified float equipped Bell Sioux landing on one of the Army's Landing Ship Medium (LSM) in 1963

Side shot of the Bell Sioux on a Landing Ship Medium (LSM) at Garden Island in 1963.

Of course not all Army Maritime Flights went to plan, a decade later: A1-647 on 19/06/1972 in Cleveland Bay.

Odd Stories: Consolidated B-24D-CO Liberator: 41-11868 later A72-9



The B-24D was the first truly combat-capable version of the Liberator to be delivered to the USAAF. Under the provisions of the Liberator Production Pool program, B-24D was the designation assigned to those production Liberators built by Consolidated/San Diego as primary contractor.

As part of its participation in the Liberator Production Pool, the Consolidated/San Diego plant supplied components and sub-assemblies of B-24Ds to Consolidated/Fort Worth and to Douglas/Tulsa for final assembly.

The first B-24Ds produced by Consolidated/San Diego were delivered to the Army in late January or early February of 1942. A total of 2425 B-24Ds were built by Consolidated/San Diego.

Beginning with the 77th production B-24D (41-11587), a Bendix-designed remotely-controlled power turret was installed in the ventral position. It housed a pair of 0.50-inch machine guns.

The power turret was retractable and was aimed by a gunner who sighted the target through an optical periscope. A similar sort of design had been fitted to the early B-17E.

On both aircraft, gunners found the system to be completely unworkable in combat. It was almost impossible to see anything through the rather complicated optical system during realistic operational conditions, the gunners often suffering from disorientation, vertigo, and nausea when sighting a target through the periscope. When viewed to the front, the target showed up in the sight in its normal upright position, but the image tilted left or right on the sides, and was inverted in the sight when viewed to the rear.

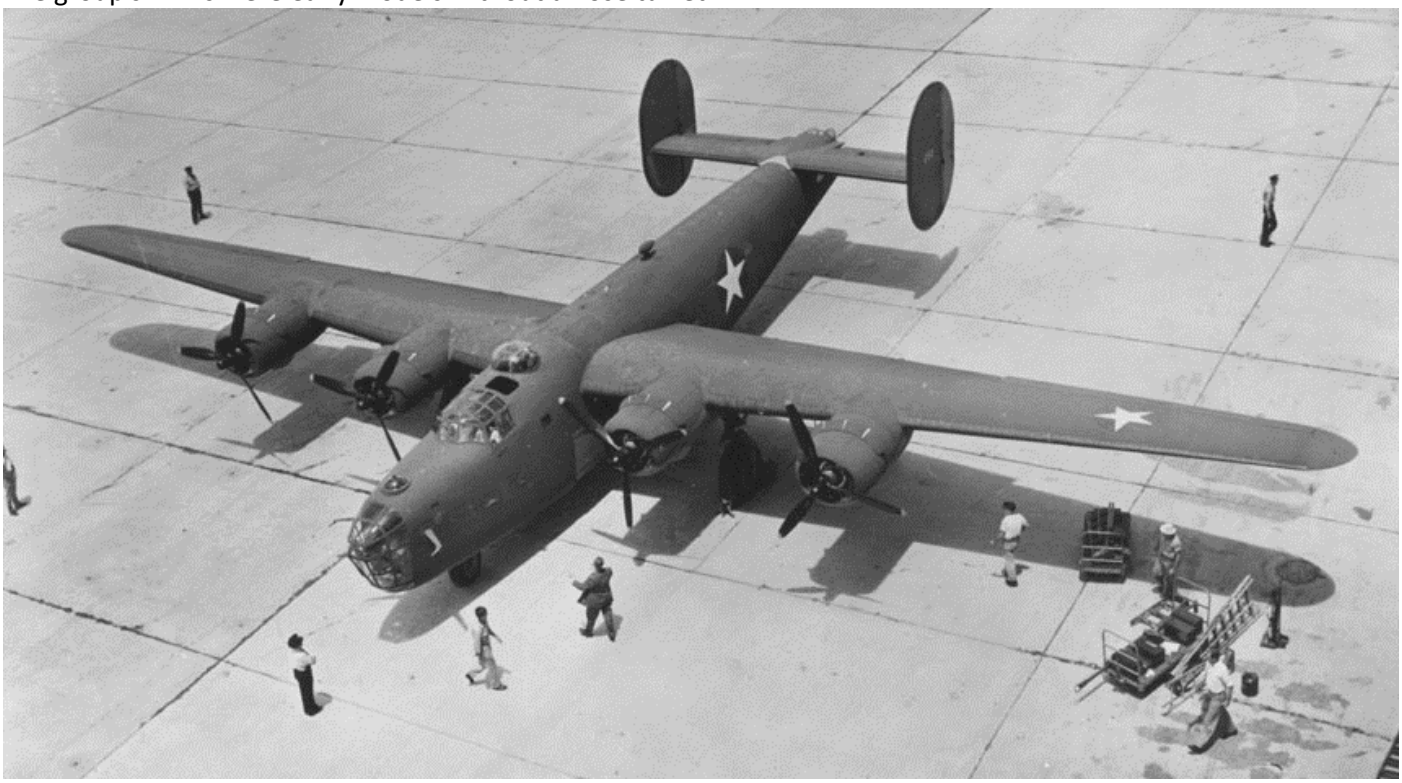
After 287 B-24D-COs had been built with this turret, including B-24D-CO 41-11868, the USAAF finally admitted that the sighting system was unworkable, and the ventral tunnel gun was re-introduced on the B-24D-15-CO 41-23970 production block of airplanes. But world events required immediate action, particularly the Pacific, and as fitted, B-24D-CO 41-11868 was assigned to a combat Unit, the 90th Bomb Group.

To the Pacific

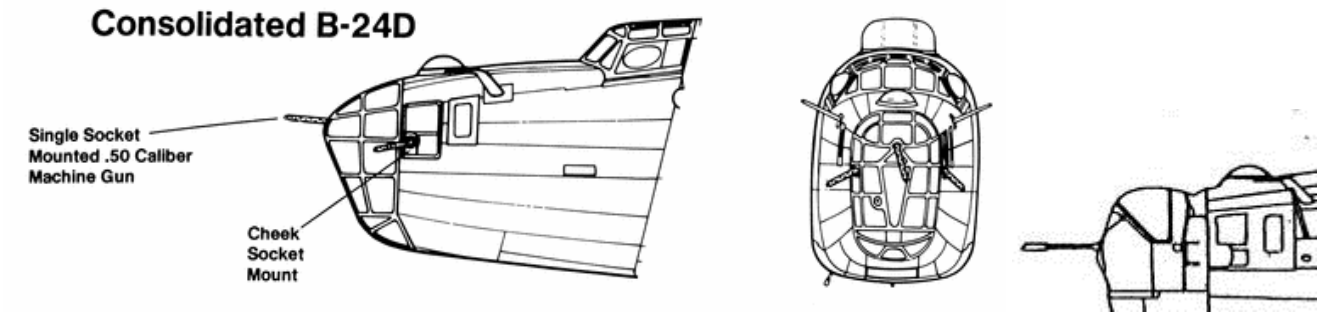
In November 1942 the 90th Bomb Group moved to Australia, where it joined the Fifth Air Force and immediately entered combat.

The heavy bombers were used rather differently in the Pacific theatre - lacking the range to reach Japanese industry for most of the war the B-24s were instead used to attack Japanese troop concentrations, airfields, ground bases and shipping across large areas of the south-west Pacific theatre.

The group's B-24s were early models without a nose turret.

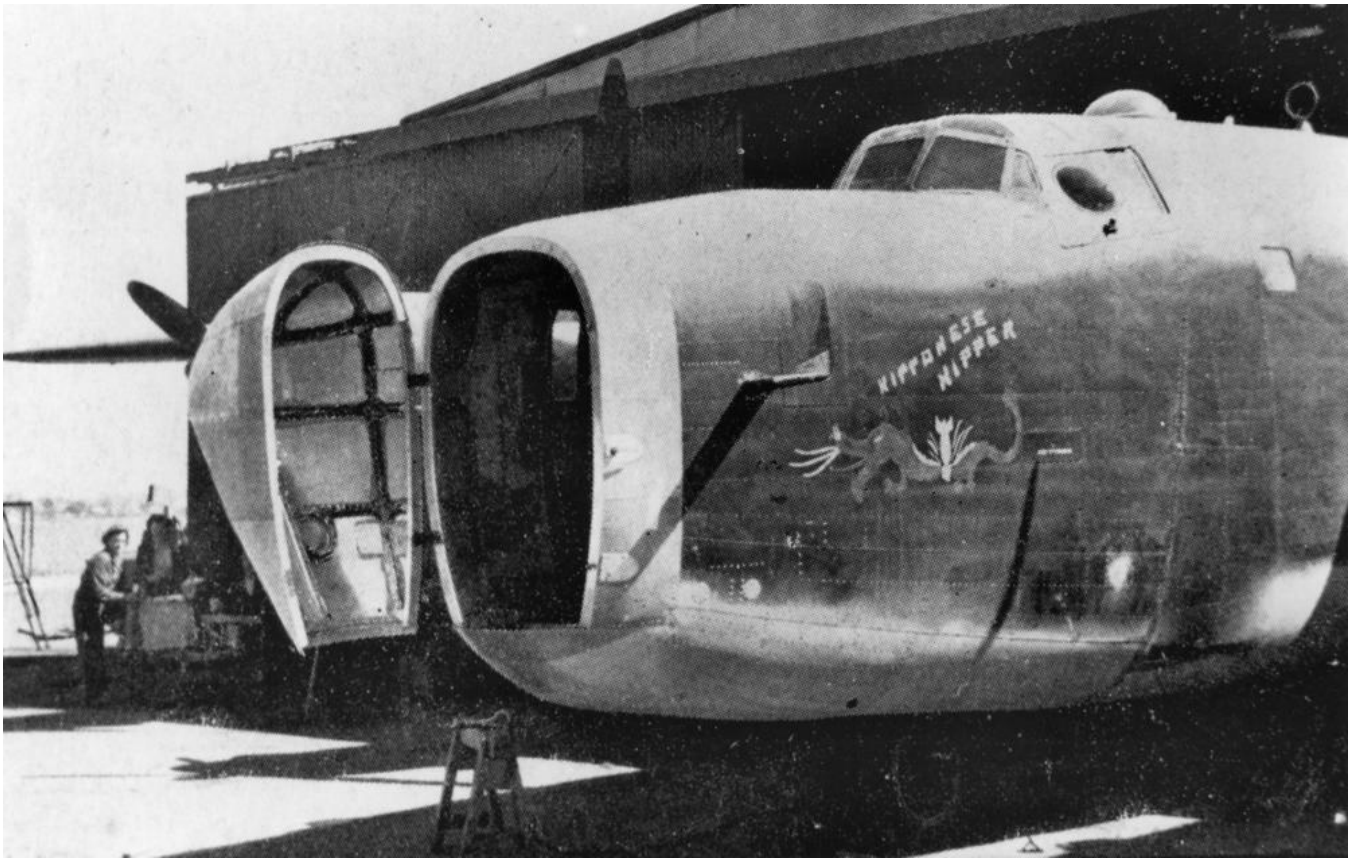


During the winter of 1942-43 some of them were equipped with Consolidated tail turrets mounted in the nose. This work was carried out at Archerfield, Australia, and was considered to be a success. Thirty-five more turrets were requested in January 1943 and they arrived in March.



More were requested in May. General Kenney, commander of the Fifth Air Force, also had the ball turret replaced with manually operated .50in machine guns. Not all held 5th AAF B-24Ds received the nose turret modifications,

including B-24D-CO 41-11868, now named “Change of Luck”. **Author Note:** *Below is the attributed photo of her in USAAF 5th AAF Service, however, the Glass lines and plating signifies a front turret installed at the time of picture.Refer Turret Nose installation on previous Page. It seems that it was converted with a swinging Nose Cargo Door after being withdrawn from operations as in the case of fellow ex 5th AAF B-24D Nipponese Nipper.*



The group began to make a major contribution to the fighting in January 1943.
At this early stage its abilities were limited by aircraft serviceability, with on average fifteen of its sixty aircraft available at any one time.

The group officially moved to Port Moresby in February 1943 and it remained there for most of the year. This reduced the distances the aircraft were flying, and in turn improved availability.

While most of the group moved to Port Moresby the 319th Bombardment Squadron moved to Darwin, where it remained from February-July 1943.

During this period it operated over the Dutch East Indies, attacking Amboina, Koepang, Makassar and Kendari. It was replaced in this role by the 380th Bombardment Group and joined the main part of the group at Port Moresby.

The RAAF gears up for Heavy Bombers in 1944
The first Liberators to be obtained by Australia were ex-USAAF B-24Ds. In February of 1944, twelve B-24Ds were obtained second-hand from USAAF stocks and delivered to Australia.

By this time, the B-24D was well past its prime, and was deemed suitable only for operational training, pending the arrival of more capable Liberator versions.

They were assigned the RAAF serials A71-1 through to A72- 12. One of these was an ex 320th Bomber Squadron (90th Bomb Group) B-24D-CO, 41-11868 named “Change of Luck”.

It was received into the RAAF at 7AD for overhaul from the USAAF on the 19th March 1944, and emerged as A72-9 and was delivered to No 7 Operational Training Unit based at Tocumwal, New South Wales on the 28th April 1944. None ever saw any combat, and were used to carry out heavy bomber operational training for RAAF air crews.

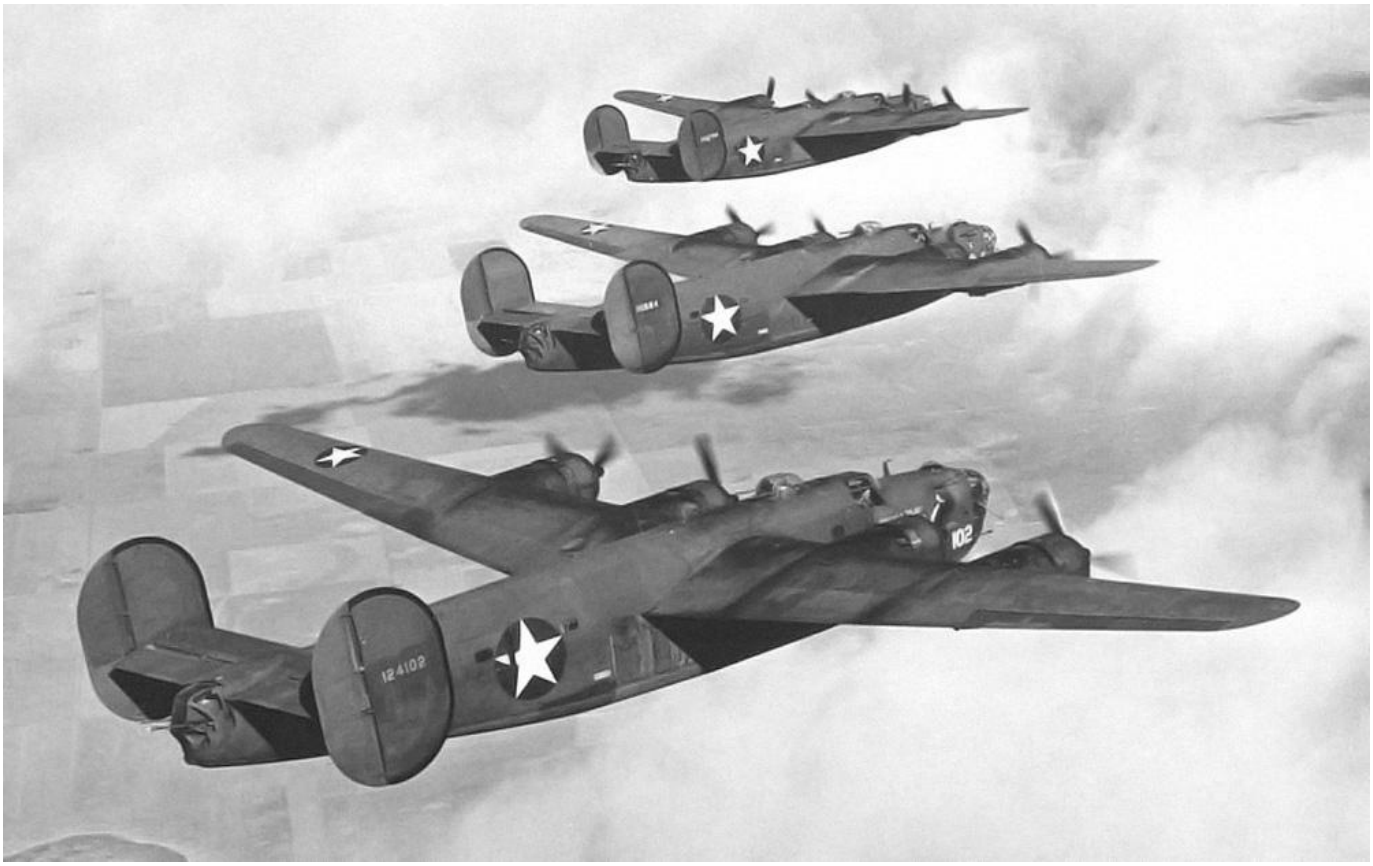
With more modern versions arriving in greater numbers, some of these older and unreliable B-24Ds were withdrawn or transferred for other roles. A72-9 was transferred and received by 1 Air Depot’s Test and Ferry Flight on the 22nd November 1944.

They operated the aircraft up to the 28th February 1945, when its material condition required it to be sent to 7 AD for overhaul and repairs. On completion, it was issued to 82 Wing RAAF on the 29th May 1945 for use as a transport to move spares from Archerfield Aerodrome to North Western Command for the Wing based in Darwin.

It was received by 24 Squadron RAAF on the 3rd June 1945, having been named “White Cargo” by 1AD T&F Flight or 7AD. Its condition was not really accepted as airworthy and the aircraft was transferred to 12 Aircraft Recovery Depot for inspection and possible repairs on the 9th June 1945.

However, on the 28th July 1945, it was allotted to 8 Central Recovery Depot based at Darwin RAAF Station for conversion to spares due to its condition. Finally, its fate sealed, it was issued on the 11th September 1945 for conversion.

As for A72-9: AMSE Approval to Write-off per File#9/16/2752 Dated 30th July 1945, with action commencing 14th September 1945.



Just thrown in for appreciation for the B-24D was one of the hardest aircraft to fly in formation due to the slippery Davis Wing and continued power management of four engines. This is a shot of echelon perfection.

Future Flight: Latest things and airframes coming.

BAE Tempest FGR1 unveiling late 2018. Replacing the Typhoon GR4

Gavin Williamson, the U.K's Defence Secretary, speaking at the unveiling of the new Tempest fighter at the Farnborough Air show 2018 said, *"We have been a world leader in the combat air sector for a century, with an enviable array of skills and technology, and this strategy makes clear that we are determined to make sure it stays that way."*

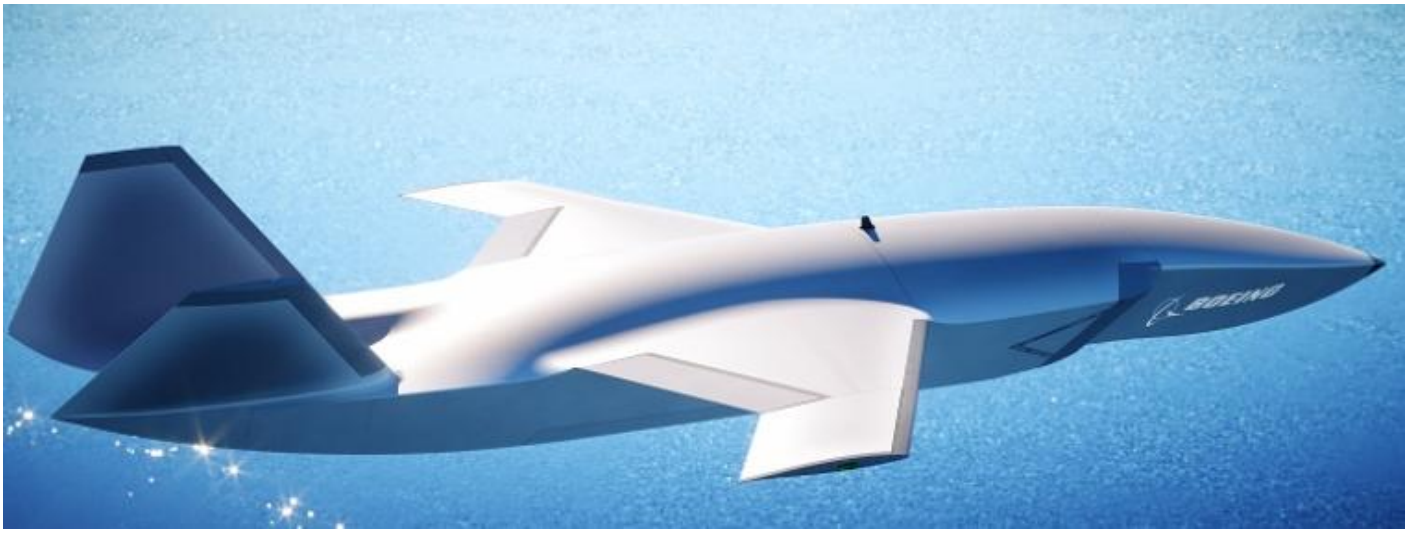
BAE Tempest is a proposed stealth fighter aircraft concept to be designed and manufactured in the United Kingdom for the Royal Air Force. It was unveiled at the Farnborough Air show as a future part of the RAF's Combat Air Strategy.

It is currently planned to be built by a consortium to be known as "Team Tempest", consisting of the UK Ministry of Defence, BAE Systems, Rolls-Royce, Leonardo S.p.A. and MBDA, and is intended to enter service from 2035 replacing the Eurofighter Typhoon aircraft in service with the RAF. £2 billion (approximately $2.66 billion) are to be spent by the British government on the project by 2025.

It was announced by the British Defence Secretary Gavin Williamson on 16 July 2018 that the Tempest will incorporate a host of new technologies; meaning the British aircraft would join the growing group of sixth-generation jet fighters now on the drawing board.

Meanwhile secretly in Australia; the future came with a statement of a unknown RAAF Project

The Australian government announced at the Avalon Air Show plans to build a fighter-sized system designed to act as a "loyal wingman" in conjunction with high value assets such as the P-8A Poseidon or E-7A Wedgetail, or with combat aircraft like the F-35A or F/A-18F.



A full-scale ATS air vehicle was unveiled at a 27th February 2019 event at Avalon attended by senior RAAF personnel, Boeing executives, and defense media.

The development of the system is primarily being funded by Boeing, but with a $40 million injection from Air Force Minor Program DEF 6014 Phase 1, for which Boeing will deliver three air vehicles and associated systems.The Boeing Airpower Teaming System is being developed in conjunction with the Royal Australian Air Force and the Defence Science & Technology (DST) Group.

Boeing has also partnered with companies such as BAE Systems Australia, Ferra Engineering, RUAG Australia, Micro Electronic Technologies, AME Systems, and Allied Data Systems.

“The partnership will produce a concept demonstrator of a low cost unmanned ‘Loyal Wingman’ aircraft, capable of operating in concert with Air Force’s fifth generation air combat capability,” Defence Minister Christopher Pyne said in a statement.

The decision to develop the ATS in Australia represents the first full-scale Australian-designed high-performance aircraft development program since the Jindivik drone in the 1950s and 60s.

Near Future; RAAF Subset:

A Royal Air Force (RAF) team based in the US is preparing the way to introduce the MQ-9B Protector into service, the RAF announced on 13 March, 2019

General Atomics Aeronautical Systems, Incorporated (GA-ASI)’s ‘Sky Guardian’ – known as the MQ-9B – is the most modern of the variants and is substantially more capable than its predecessors.

The first MQ-9B Sky Guardian aircraft has been busy, completing more than 75 flights and 400 flight test hours. Last year the aircraft set an endurance record for Predator series aircraft when it flew for more than 48 consecutive hours.

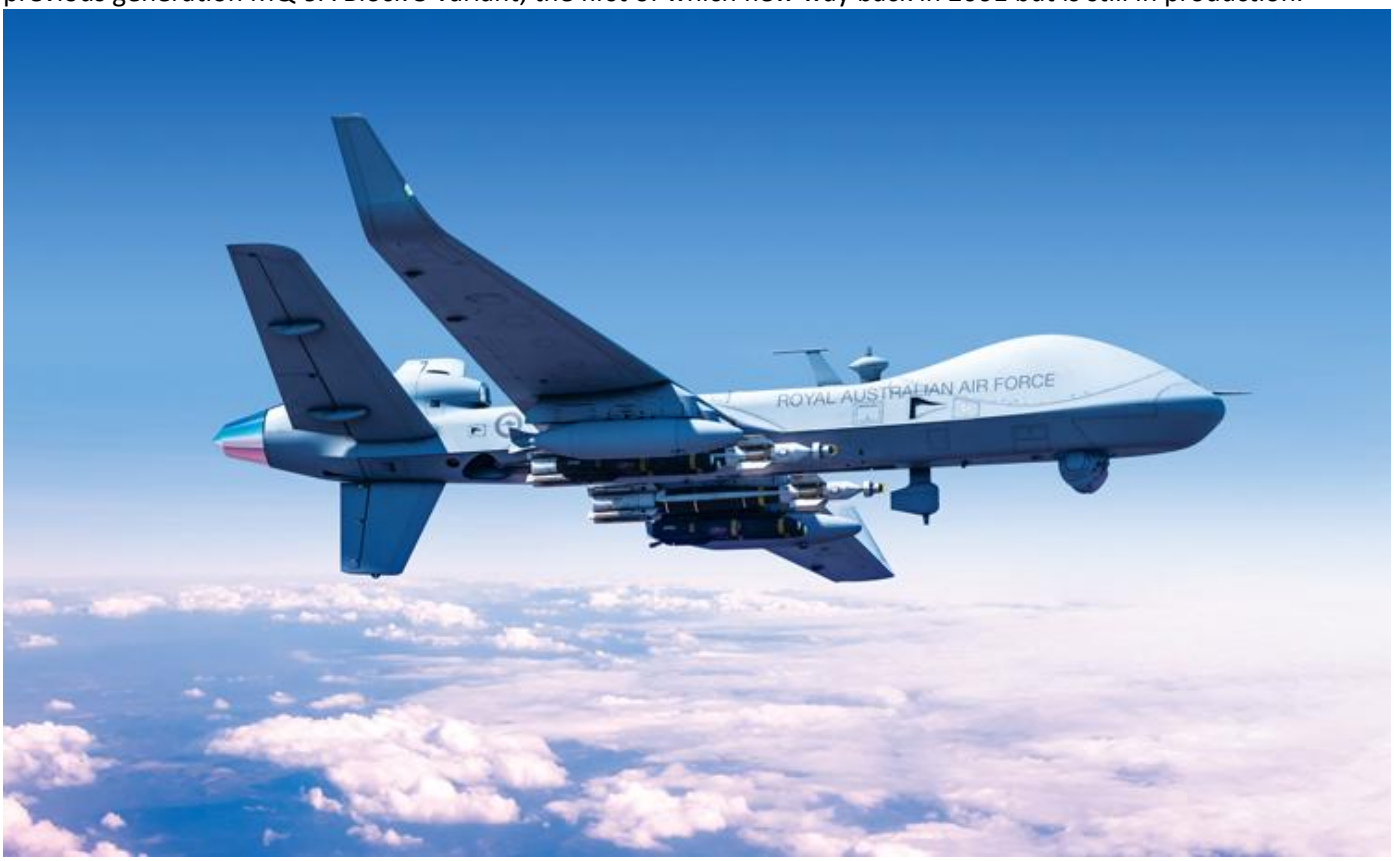
With endurance of up to 40 hours, a rapidly reconfigurable payload, a sense and avoid system, and able to carry a variety of weapons, it seems the logical choice.

Last November, the Australian Government named GA-ASI to provide the Armed RPA system under Project Air 7003, with the specific variant – the MQ-9A or advanced MQ-9B – to be selected during 2019.

Australia has yet to make a choice between the MQ-9 Reaper Block 5 variant, shown here, which is currently in production for the U.S. Air Force, or the MQ-9B Sky Guardian under development for the United Kingdom.

Between 12 and 16 airframes will be ordered under Air 7003 Phase 1 (Armed MALE UAS).

Under its evaluation, it is still considered under development and the RAAF has apparently not ruled out the previous generation MQ-9A Block 5 variant, the first of which flew way back in 2001 but is still in production.



Above, A MQ-9B in RAAF Markings

USAF MQ-9A Block 5

Editor Opining:

Given the World War 2 Air Force/Navy relationships and perhaps more importantly, later Vietnam Army Support Heraldry, that may reflect its future roles; the RAAF may resurrect No 9 Squadron to operate this type since it can be used both in maritime, ISR and direct support roles.

This would reunite No 9 and No 5 General Reconnaissance Squadrons (if the later is used for the Northrop Grumman MQ-4C Triton Squadron Number plate). No 10 Squadron would be the suspected number plate for the four to five MC-55A Aircraft, leading on with its past role of ISR per the two specially modified AP-3 Orions.

<u>Near Future; Subset:</u> Army Special Operations Aviation Support Helicopters

Under Project Land 2097 Phase 4, the Army is seeking an in-service Light Helicopter to augment the forthcoming Special Operations Aviation MRH-90 Element (6th Aviation Regiment) supporting Special Operations Command-Australia (SOCOMD).
The request for information will close at the end of 2019, with deliveries commencing in 2022.

SOCOMD requires enough Helios to support a force of two four aircraft force elements at two separate locations and two ready aviation elements of four aircraft. That means sixteen aircraft on line.

The physical size of the aircraft, carrying capacity (both men and weapons; pending roles) and its ability to be transported with little or no preparation in numbers (four) by C-17A on short notice.

Traditional in-service and reserve requirements ratios would mean a two to one ratio, equalling between twenty-two or twenty-four aircraft in total to be ordered, as a minimum buy.

Contenders are:

- Leonardo AW109 Trekker (Skid and missionised)
- Bell B407GT
- Boeing AH-6i Little Bird
- Airbus Helicopters H145M (Known in use in Utility Version of the US Army as a UH-72 Lakota)

All of these will have a mission package that will and can include, an EO/IR/Designator Turret, ability to fire Hellfire Missiles, 70mm Rockets and Gun pods in lieu of troops as required. They will and can operate in Close Urban Environments (Built up Cities with Skyscrapers and bridges and over passes), and/or natural space crammed geographical environments, be it jungle or mountainous, small clearings and ship board spaces.

Airbus Helicopters H145M

The H145M (previously known as EC145 T2) is a multi-role twin-engine battlefield support helicopter produced by Airbus Helicopters. It is primarily intended for use by military and law enforcement agencies. The helicopter can be deployed in transportation, special operations, intelligence, surveillance, target acquisition and reconnaissance (ISTAR), search-and-rescue, fire support, and medical evacuation missions.

The H145M is equipped with a modern digital glass cockpit that integrates Helionix® avionics suite. This cockpit is compatible with night-vision goggles (NVG). It houses a head-up display (HUD) and a helmet-mounted sight display (HMSD) with day and night piloting and firing capabilities. Featured on the military helicopter is a mission computer, an infrared / TV electro-optical system, an emergency locator transmitter (ELT) and a laser range-finder / designator

/ pointer. The four-axis digital autopilot aboard the cockpit reduces crew fatigue. The H145M is powered by two Turbomeca Arriel 2E engines equipped with dual-channel full-authority digital engine controls (FADEC). Each engine develops a maximum continuous power of 771shp (575kW). The helicopter has a fast cruise speed of 244km/h, a maximum speed of 250km/h and maximum range of 662km. Its outstanding hover performance allows for operations at altitudes of 2,700m (8,858ft).

Bell B407GT

The single engine Bell 407GT incorporates the Garmin G1000HTM flight deck to easily provide flight information. It can include infrared cameras, various armaments, and equipment to perform different missions such as armed transport, search-and-rescue, reconnaissance, and medical evacuation. The GT version uses the universal weapons pylon (UWP), derived from the Bell OH-58 Kiowa, to carry different weapons including machine guns, rockets, and anti-armour missiles

Leonardo AW109 Trekker

The AW109 Trekker is the newest light twin-engine helicopter in the 3-tonne class; ideally suited to training, utility and aerial work operations which require best-in-class lifting capability, alongside superior range and performance.

The aircraft features a large, rapidly reconfigurable modular interior multi-role versatility, rugged, skid landing gear and cocoon-type high strength airframe and crash resistance systems for optimised safety.

The AW109 Trekker features Category A Class 1 performance with no payload reduction up to ISA+20 (35°C @ SL) in Cat A VTOL for safe O.E.I flight.

- MTOW (int./ext.): 3,175 / 3,350 kg (7,000 / 7,385 lb)
- Powerplant: 2 x Pratt & Whitney Canada PW207C (Take-Off: 2 x 735 shp)
- Crew/Passengers: 1 or 2 pilots with 7 or 6 passengers

Boeing AH-6i Little Bird

The AH-6 is a highly capable light attack / armed reconnaissance helicopter specifically designed with superior performance characteristics and flexible, easily configurable mission equipment ideal for Light Attack, Precision Attack, Anti-armour, Close Combat Attacks, Reconnaissance, Security & Escort, Troop Insertion/Extraction, and Combat Search & Rescue.

The AH-6's mission computer processes large amounts of data and shares information across all aircraft systems quickly.

- Maximum Cruise Speed 126 knots
- Maximum Range 179 nmi (331 km)
- Maximum Endurance 2.1 hrs
- Maximum Rate of Climb 2,162 ft per min
- Maximum Service Ceiling 20,000 ft

Summary.....

Recapping...according to the RFI, the requirement is for a proven commercial or military off-the-shelf light helicopter, which is already in service with other operators.

Other requirements include optimization for use in dense urban environments, capable of rapid deployment by the Royal Australian Air Force's C-17A airlifters, and the ability to be fitted with simple and proven intelligence, surveillance and reconnaissance equipment and weapons.

The RFI does not specify a desired size for the new helicopter, but four are required to be deployed aboard one C-17A. All four known competitors do, with variances in break down.

The only combat proven Special Operations aircraft in this class are the AH6 Little Bird, in its earlier version with the US Army Special Operations Command, and the Bell 407GT in its Iraqi Army version,during the past few years of war with ISIS.

Editor's opining

Given the ADF's history in recent helicopter selections, specifically with the Airbus Helicopters MRH-90 and ARH types reaching their specified Army IOC acceptance, one would wonder if they would try a third time with the unproven H145M.

There is a success story in the ADF's Joint Training Helicopter, the H135T, but this is merely a benign training role with the odd seaborne landing during the late phases of training.

One wonders whether we would wait and suffer operationally for a capability gap of 10-15 years in fulfilling a desired role with our beloved and relied upon Special Operations Command-Australia (SOCOMD).

The key issues...in service and inter-operability with our main Allies, that being the US Army's Special Operations Command, as in Afghanistan.

Go AH-6i Little Bird.....

End Notes

RAAF AIRCRAFT MARKINGS SINCE 1950 – PART 11 SILVER TRANSPORT AIRCRAFT WITH DAYGO John Bennett 2019

[1] For 'Silver to Grey' see *ADF Serials Telegraph* Vol.6 Issue 6, Summer 2016:
http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%202016%20Summer.pdf

[2] The closest FS number is 28913, which was replaced with *International Orange* FS12197 about 1970, at the same time as ANA 633 was deleted from USAF schemes. The main reasons for the end of dayglo with the USAF were, as we have discussed, cost and the poor stability of the fluorescent colours, that faded badly. FS12197 is not a fluorescent colour, just a gloss orange.

[3] Winjeel A85-404 served on 34(ST)SQN over OCT 1960-JUL 1964, and A85-438 SEP 1960-JUL 1964; E/E.88s for A85-404, A85-438. Vampires flown by 34(ST) SQN included T.35As A79-801, -805, -818, -823, -825, -834 and -835, T.35s A79-651 and -665, most of which had dayglo applied from JUL-DEC 1961.

[4] RAF Air Publication (A.P.) 119A-0601-1D A/L9, MAR 1972, 'Application' para.5.

[5] UK introduced '*Dockerblaze Orange Red*' as its fluorescent orange (RAF vocabulary 33B-2202312) which, like the US colour, was applied over a white primer.

[6] RAAF DEPAIR Signal TEF 950 410/1/261, of 4 NOV 1965, stipulates: "Approval given by Air Board Agendum 13128 for kangaroo insignia to replace existing roundels on upper and lower mainplanes. Kangaroo is to be placed head forward and feet inboard in each case."

[7] For policy details of RAAF aircraft serialling, re 'consecutive' or 'aircraft c/n', see *ADF Serials Telegraph* Vol.5 Issue 3, Spring 2015:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202015%20Spring%20Vers%20Fin.pdf

[8] See *adf-serials* Vol 8 Issue 4, Spring 2018, for **Winjeel** article no.9 in this series:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202018%20Spring.pdf
For trainers, application of dayglo took about two weeks. The Winjeel work was carried out by "CAC team at 1BFTS" over APR to JUN 1961, while Vampire dayglo application was undertaken by de Havilland at Bankstown from JUN 1961. RAAF E/E.88 A85 and A79 cards.

[9] E/E.88 A79 Status Cards. The two-week modification is annotated as "Mod332 P.O.764962".

[10] See *adf-serials* Vol 7 Issue 4, Spring 2017, for **Vampire** article no.4 in this series:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Spring%20.pdf

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

[12] 2 (Comms) SQN Unit History A.50 FEB 1948; J Bennett, *Highest Traditions, The History of 2 Sqn RAAF*, AGPS, Canberra, 1995, p.250.

[13] NAA MP 1070/1, CF 411/2, 1948.

[14] A Jackson, *Avro Aircraft Since 1908*, Putnam, London, 1990, p.385. A wooden mockup of the Tudor had been constructed at the factory, and the RAAF serial block A76- had been allocated, later assigned to the B-29A Washingtons introduced to service at Woomera.

[15] C Barnes, *Bristol Aircraft Since 1910*, Putnam, London, 1994, p.336.

[16] E/E.88 Status Card for A81-4 for 19 APR 1951, states "Overseas Ident 6023 to convert to Mk.21E".

[17] NAA CRS A705 166/28/827 C33/11/AIR(12A) of 4 DEC 1953.

[18] A81-4: at M/S EDN a new tail was being fitted in SEP 1966, but warped mainplane could not be replaced. Disposed of as spares. http://www.goodall.com.au/australian-aviation/bristol170/bristol170.html

[19] By 1955, Bristol's facilities comprised an airframe and electrical overhaul shop at Bankstown airport, and an engine overhaul section in the Bankstown suburb; 'The Australian Industry', in *Flight*, 26 AUG 1955, p.327.

[20] De Havilland then became Hawker de Havilland (HDH) Australia in JAN 1963; N Parnell & T Boughton, *Flypast*, p.305.

[21] Major servicing of the Dakota was covered in a previous instalment; Vol 7 Issue 5, Summer 2017:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Summer%20.pdf
In summary, at the beginning of NOV 1946, the DAP-Maintenance Division, which had major RAAF servicing contracts for their airframe workshops at Parafield, became the Division of Aircraft Production (DAP) within the Dept of Supply and Development, which later became the Dept of Supply. A major activity in 1952 was for DAP Parafield to modify Dakotas to Navigation Trainer (NT) configuration for SAN at East Sale. In OCT 1960, DAP Parafield became Airframe Repair Workshops (ARW), but maintained major RAAF Dakota servicing throughout the 1960s, until 1969 when major Dakota maintenance finished, Dakota major servicing was awarded to HDH at Bankstown.

[22] *Units of the RAAF, Vol 7 Maintenance Units*, AGPS, Canberra, 1995, pp.125-6.

[23] Ian K Baker, *Aviation History Colouring Book*, Queenscliff, No.81, 2014, p.4.

[24] The Air Board on 8 JUN 1956 proposed to adopt the "kangaroo in motion" roundel on the fuselage, which the Minister for Air approved on 2 JUL 1956; DepAir 470/1/11. Interestingly the RAN at this stage adopted the new roundel in all six positions.

[25] Request made by Air Board Agendum 13128 of 16 SEP 1965; implemented by 410/1/261(66) of 4 NOV 1965.

[26] It appears **A81-4** may have been the first aircraft to receive dayglo in DEC 1961-**JAN 1962**: its E/E.88 shows it entered servicing with Maint SQN Edinburgh (M/S EDN) on 20 OCT 1961, then underwent modification configuration checks, and weighing – so

painting may have occurred at this stage. Similarly the E/E.88 for **A81-1** shows it was passed from Bristol Aviation Services to M/S EDN on 6 OCT 1961 for 'E' Servicing and fatigue life modifications (as Bristols were now pulling out of major maintenance), and then returned to 2 ATU on **13 DEC 1962**. The only mention of "painting" on the Status Cards is on the E/E.88 for **A81-3** for 9 OCT 1962 for 'D' Servicing "and painting per RAAF Special Technical Instruction (STI)", returning to 2ATU on **22 OCT 1962**. This places the three aircraft undergoing enhanced maintenance by M/S EDN and released over JAN-DEC 1962. They were each probably brightened up after two or three years.

[27] A81-2 crashed 25 NOV 1953; NAA CRS 705 166/28/827 C33/11/AIR(12A) of 4 DEC 1953.

[28] Photo by Neil Follett at Geoff Goodall's website:
http://www.goodall.com.au/photographs/raaf-edinburgh/RAAF-EDINBURGH.html

[29] The Goodall Australian Aviation site records that A81-4 was overstressed by a windstorm while parked at Woomera c1964; it was dismantled and moved by road transport from Woomera to Edinburgh, and though 1965-66 remained dismantled, although a new tail section was fitted, but reportedly one of the mainplanes was warped and a replacement wing was unable to be fitted. When the other two aircraft were tendered for disposal in JUL 1967, and sold in 1968, A81-4 was offered as a hulk packed with spare parts. The fuselage was moved off base and was on its belly on land just outside the airfield boundary near the Elizabeth City Council Rubbish Tip; it had gone by JUL 1969:
http://www.goodall.com.au/australian-aviation/bristol170/bristol170.html

[30] For references, *adf-serials* provides RAAF service and E/E.88 cards; Goodall's *Australian Aviation/Bristol 170* the civilian histories.

[31] For policy details of RAAF aircraft serial numbering, re 'consecutive' or 'aircraft c/n', see *ADF Serials Telegraph* Vol.5 Issue 3, Spring 2015:
http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202015%20Spring%20Vers%20Fin.pdf

[32] 34 (ST) SQN formed 8 JUL 1959, ABO N.178/1959 of 10 SEP 1959.

[33] The 6" titling was smaller than later applied as standard to the Dakota and C-130, presumably to keep an attractive look for its VIP role. Later, RAAF DEPAIR AIR ENG signal TEF.951, 4101/261 of 1 NOV 1965 specified reference of AAP 729.21 of "all transport aircraft to have words ROYAL AUSTRALIAN AIR FORCE applied in 10.5" red letters to upper sides of fuselage"; drawings A13286 sheets 1 & 2 are referred to in the AAP 729.21 Vol 1 Ch 1 Sec 9; and in addition for the C-130, RAAF AAP 7002.046 Air Logistics SPO drawing nos ALO1009-06-01 and -05-01 of 2001 refer.

[34] http://australianaviation.com.au/2016/08/convair-cv-440-arrives-at-hars/

[35] http://www.taamuseum.org.au/TAAAircraft/aircraft_convair.html

[36] http://www.saam.org.au/wp-content/uploads/2015/04/SAAM-Profiles-CONVAIR-240-340-440.pdf

[37] This was shown by a FEB 1966 DepAir Minute advising on the standard VIP scheme for the new 34SQN aircraft entering service:
"CO 34 Sqn has verbally indicated that an increase in 10 general hands will be required to maintain the VIP fleet in the clear skin finish as against 6 if all aircraft are fully painted [light grey]"; RAAF DepAIr Minute 410/1/261(74), DCAS to CAS, 3 FEB 1966.

[38] Both images of A96-313 from *Radschool Magazine*, Vol 31, APR 2010, p.11, RAAF Radio School Association.

[39] DepAir 410/2/30(9) of 15 SEP 1967.

[40] 34SQN Unit History A.50 APR 1968.

[41] E/E.88 A96 Status Cards.

[42] https://registry.faa.gov/aircraftinquiry/NNum_Results.aspx?NNumbertxt=N912AL

[43] *Units of the RAAF, Vol 7 Maintenance Units*, AGPS, Canberra, 1995, p.70.

[44] It appears from the E/E.88 A97 Status Cards that the last 'E' Service was undertaken by QANTAS in 1967, and the aircraft were then maintained under a different life extension philosophy of "Anti-Deterioration Servicing" (ADS), which again occurred about every three years.

[45] This *may* have been directed in APR 1961 by the RAAF Support Command *Special Technical Instruction, STI/Hercules Ac/58* dated 19 APR 1961, referenced on the E/E.88 for A97-208 of 12 MAY 1961. Although the card does not specify dayglo, we have seen before that major changes to RAAF external markings have been introduced by an STI (which replaced the Special Instruction General – SIG), so the introduction of dayglo to the C-130A could have been by *STI/Herc/58*.

[46] C Coulthard-Clark, *The RAAF in Vietnam*, Allen & Unwin, Sydney, 1995, p.35.

[47] Coulthard-Clark, p.247.

[48] Forward cargo door: 7.3 ft (2.23m) wide, 6 ft (1.83m) high, at truck bed height; *Aviation Week*, McGraw-Hill, 3 DEC 1956, p.52. In APR 1966, the RCAF had a major accident with C-130B 10304, when it lost the forward cargo door inflight, resulting in an explosive decompression and structural damage; *Airforce*, RCAF Ottawa, Vol 28, No 4, Winter 2004/2005, p.34.

[49] RAAF AAP 7021.004-1, *Aircraft Finishing Schemes*, DepAir Canberra, 17 NOV 1971, para.16.

[50] Undated DefAir letter 579/3/264 discussing roundel sizes.

[51] Aircraft serial number font 8" high, 5" wide, 1" stroke from AAP 7002.046 drawing no. ALO1009-07-01; 'last two' fin number 36" high, 24" wide, 5.5" stroke from AAP 7002.046 drawing no. ALO1009-06-01.

[52] These large 40" (from mensuration) nose numbers, applied soon after delivery, were made redundant by the large 36" tail numbers with the introduction of dayglo in 1961.

[53] The first C-130E (61-2358) had a forward cargo door, as it had started on the assembly line as a B model:
http://www.c-130.net/aircraft-database/C-130/interesting-aircraft/

[54] These twelve registrations were not taken up, but FAA historical records still list the Global Jet Sales registrations for A97-206, -209, -213, and -214 as being cancelled in NOV 1980.

[55] The E/E.88 cards for the two intended for Colombia (A97-212 and A97-216) are annotated with postscript additions as 'Aviaco Columbia' [sic].
[56] https://registry.faa.gov/aircraftinquiry/NNum_Results.aspx?NNumbertxt=N131EC
[57] *adf-serials* has covered this in SEP 2012, see: http://www.adf-messageboard.com.au/invboard/index.php?showtopic=2120
[58] https://registry.faa.gov/aircraftinquiry/NNum_Results.aspx?NNumbertxt=N216CR
[59] https://www.airforce.gov.au/sites/g/files/net3736/f/minisite/static/1469/RAAFmuseum/exhibitions/external/lockheed1.htm
[60] https://registry.faa.gov/aircraftinquiry/NNum_Results.aspx?NNumbertxt=N205FA
[61] See *adf-serials* Vol 7 Issue 2, Autumn 2017, for **Canberra** article no.2 in this series:
http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%202017%20Autumn.pdf
[62] E/E.88 A84 Status Cards.
[63] See *adf-serials* Vol 7 Issue 3, Winter 2017, for **Meteor** article no.3 in this series:
www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Winter%20Final%20Edition.pdf
[64] A65-78 was the first Dakota with the new ARDU tail design at Laverton on 5 NOV 1974; ARDU Unit History A50 NOV 1974.

[65] **End Notes SQUADRON MARKINGS OF THE A.F.C. By John Bennett**

B Robertson, *WWI British Aeroplane Colours and Markings*, Albatros, Berkhamsted, 1996, p.26.
[66] R Sturtivant & G Page, *The S.E.5 File*, Air Britain, Tunbridge Wells, 1996, p.7.
[67] L Rogers, *British Aviation Squadron Markings of World War I*, Schiffer, Atglen PA, 2001, p.7.
[68] Rogers, pp.25-49.
[69] Rogers, pp.7, 51.
[70] Rogers, p.8.
[71] B Robertson, *Aircraft Camouflage and Markings 1907-1954*, Harleyford, Letchworth Herts, 1961, p.42.
[72] B Robertson, *Aircraft Markings of the World 1912-1967*, Harleyford, Letchworth Herts, 1967, p.212.
[73] M Lax, *One Airman's War*, Banner Books, Maryborough, 1997, p.10.
[74] E Richards, *Australian Airmen*, Bruce & Co, Melbourne, 1922, p.7.
[75] J Bennett, *Highest Traditions, 2 SQN RAAF*, AGPS, Canberra, 1995, p.13.
[76] 69 SQN RFC War Diary, AUG 1917, p.4.
[77] H C Brinsmead, "In France with the 68th (2nd Squadron) AFC", in *Oswald Watt the Airman,* by S Ure Smith, B Stevens & E Watt, Art in Australia Ltd, Sydney, 1921, p.25.
[78] 71 SQN RFC War Diary, 18-22 DEC 1917; Richards, p.12.
[79] Rogers, pp.130-136, 287-288.
[80] *S.E.5 File*, p.163; Rogers, p.130.
[81] Bennett, pp.366, 368.
[82] The *S.E.5 File* p.163 states for 68SQN: 'A' Flight, using letters from the start of the alphabet, were marked in front of the roundel. 'B' Flight, using numbers, were marked on the engine cowling. In both cases, 'A' and 'B' Flight aircraft carried the boomerang immediately aft of the roundels. 'C' Flight, using letters from the end of the alphabet, were marked behind the roundel with the boomerang on the rear fuselage.
Also postulated has been the positioning of the boomerang – i.e. high, centred or low – indicating the respective Flight. However, photographs show this variance was not a pattern, but maybe more a whim of the painter.
[83] Rogers, p.136.
[84] R Sturtivant & G Page, *The Camel File*, Air Britain, Tunbridge Wells, 1993, p.252.
[85] Richards, p.31.
[86] Robertson, *WWI British Aeroplane Colours and Markings,* p.36.
[87] Robertson, *WWI British Aeroplane Colours and Markings,* p.47.
[88] These CRFC 1693 G documents are from the UK Public Records Office PRO – now The National Archives (TNA) – AIR1/867/204/5/523.

[89] **End Notes: Replacing the RAAF Seagulls: 1940-1941: Ducks, String Bags & Gulls galore in all shapes.**
Gordon R Birkett@2017

ASR-1 Supermarine Seagull

In response to the Air Ministry Specification S.12/40 for a fast fleet reconnaissance amphibian for use both on land and from ships Supermarine submitted the Type 347 as a candidate in April 1941. Under Type number 381 the final project was planned with a Rolls Royce Griffon. Consequently, it received, under the new Specification S.14/44 , the designation ASR-1. On 9th April 1943 the Air Ministry placed an order for three prototypes of the new amphibian with serial numbers PA 143, PA 147 and PA 152. Since there were still enough Walruses and Sea Otters operational, and since Vickers-Supermarine was heavily involved in Spitfire production the new Type 381 was not an urgent project and it fact the first prototype would not fly until two years after the war!

[90] L2319 being Hoisted aboard

[91] By January 1944, despite attrition replacements obtained during 1942/43 the problem was resolved during 1944, when all four RAN ships landed their embarked Walrus for good following the installation of Radar on those ships.

[92] On the 17 March 1942 the Duty Officer at RAAF Pearce informed Group Captain Paddy Hefferman that a number of wooden aircraft cases had arrived at the nearby Bullsbrook railway siding from the Port of Fremantle. It was assumed at the time that these boxes contained Kittyhawk fighters intended to re-equip No 77 Squadron, RAAF as 19 P-40Es were being offloaded from the SS Robin Tuxworth (USA) at the time. The crates in fact contained Swordfish, Hefferman decided to have the aircraft assembled by SGT Wright, who had experience on Wapiti aircraft though no handbooks accompanied the crates. 14 Sqn RAAF, based at RAAF Pearce, had sent off four of their Hudsons to Northern command as reinforcements by Feb 42, leaving eight Hudsons (One was later lost at Broome, A16-119, on 02/03/42), and had attached, in February 42, 6 US Navy Pilot Ratings and two Observer Ratings, along with a single Grumman JF2 Float Plane (Pilot Lt Collins USN) from the 20/02/42 landed ex USS Langley. Another type once considered a year before,...., a SOC-3 Seagull BuNo1066 from the USS Houston also arrived by early March 42:

GPCAPT Hefferman flew the first of the assembled aircraft and the aircraft are known to have been operated by 14 Squadron and No 25 Squadron as well as RAAF Pearce Station Headquarters .No 25 SQN operated at least three of the aircraft on anti-submarine patrols around Rottnest Island and Gage Roads off the Port of Fremantle.

All squadron pilots converted to the Swordfish Officialdom eventually caught up with the Station's unofficial fleet of Swordfish when RAAF Headquarters in Melbourne gave orders to have the aircraft disassembled and re-crated for forwarding to their appropriate recipients. ***25Sqn RAAF A50 Record extracts: Shows: V4689/ V4692/V4693 in use up to 24/04/42.***

PEARCE	24.3.42	SWORDFISH Aircraft, which had been assembled by No. 25 Squadron personnel, were flight tested and used for Anti-Submarine Patrols; all qualified pilots of this Squadron carrying out conversion to type flights before going on patrol.
Pearce.	30.4.42.	Strength of Aircraft 18 WIRRAWAYS, 3 SWORDFISH, 2 MOTH MINORS.

It appears that the aircraft were then sent to Royal Navy in Nairobi before being engaged in varied careers as recorded. 2 AD in Richmond also overhauled a seventh Swordfish Mk.I airframe, K8849, from HMS Warspite during Feb-Mar 1942 when the ship was ported in Sydney.
This was one of six transiting from Cape Town, South Africa on route to 151 MU Singapore for the RN FAA as reserve float aircraft for HMS's P O Wales and Repulse, then repacked redirected for HMS Warspite and others in theatre (which were then Ceylon based, but temporarily ported Australia), arriving 2nd March 1942 at Fremantle WA with floats included in crates, but with landing gear attached. Serials involved: V4685, V4688, V4689, V4692, V4693 and V4694 *Extract Source: ADF Serials – Swordfish*

Later in the UK, is Swordfish V4689, now with AAE

[93] Message AL732 11/04/41 to Air Board from RAAFLO Kingwell UK.
[94] Message AL227 16/07/41 from Air Board to RAAF American Liaison Office. However in September 1940, talks with Grumman and Wackett on our Catapult specifications, state it would work. However it was stated that it was doubtful whether they could be modified for safe use on a RN four point suspension trolley used, against the type used on US Ships.
[95]

RAAF A48-1, ex MLD V-19 pictured in mid 1942 with 3OTU. One of eighteen OS2U-3s ex Dutch Refugee Cargo meant for the MLD. A further six were returned to the US Navy for use in Noumea. Telegram Air 708 26 May 1942 HQ Allied Air Forces South West Pacific Area to C.G. U.S. Army Air Forces, Washington, signed Major C.B. Cosgrove for Brett (says all 24 ac taken from Dutch arrivals to RAAF and not to USAAF; Letter 4 August 1943 to HQ No 5 Maintenance Group, RAAF, "Aircraft received from U.S.A. and N.E.I " p 1 (says 18 ac were received RAAF, MLD#V-7 to V24, ex refugee ships in cases, un-erected). But that's a story in itself!!

[96] **End Notes:The Last Enemy Aircraft shot down by a 452 Squadron RAAF Spitfire, July 1945.**

The serials and codes of the 11 aircraft detachment were:
A58-427/QY-X, A58-430/QY-V, A58-503/QY-H, A58-516/QY-E, A58-540/QY-I,A58-564/QY-R, A58-619/QY-G, A58-636/QY-D, A58-646/QY-Y, A58-653/QY-Z, A58-719/QY-Q

[97] With 41 Sqn RAF, he flew Spitfire MKVbs including these:
AB378 Vb 2473 M45 FF 7-1-42 39MU 9-1-42 41S 8-2-42 ros 1-5-42 VASM 18-6-42 mods 332S damaged ops 31-7-42 AST 91S 'DL-T' 22-10-42 Missing from shipping recce off Dieppe 2-11-42 F/Lt A J Andrews DFC killed
AD562 Vb CBAF M45M 12MU 21-11-41 124S 10-12-41 CAC major repair 27-3-42 ros 41S 22-7-42 316S 'SZ-S' 15-3-43 306S 16-3-43 302S 26-8-43 302S 3-10-43 316S 15-12-43 234S 18-12-43 VASM 25-1-44 fuel syst mods 278S 24-4-44 u/c collapse landing Redhill Coded MY-V CAC 13-4-45 recat E SOC 26-4-45.
AB967 Vb CBAF M45 9MU 10-9-41 452S 20-9-41 R-RH 15-11-41 mods 457S 22-3-42 485S 26-3-42 118S 11-5-42 41S 20-6-42 350S 6-7-42 VASM 4-9-42 mods Cunliffe-Owen 1-6-43 hook fitt alloc as Cv Seafire Ib reserialled NX964 cancel RNDA 19-1-44 Lee on Solent 897S Henstridge bird strike a/c hit a tree 9-4-44 (S/L WA Woodfield) 761S Henstridge 7-44 Collided Seafire NX940 23-11-44 (Lt CA Bevan)
BL674 Vb CBAF M45 6MU 31-1-42 41S 19-2-42 CB ops 18-9-42 AST 308S 23-2-43 132S 19-8-43 CAC ops 27-9-43 VASM 7-11-43 fuel syst mods 277S 8-4-44 CAC ops 10-5-44 ros SOC 22-4-45
BL850 Vb CBAF M45M LFLRVb 6MU 14-2-42 402S 9-3-42 312S 4-5-42 41S 13-8-42 308S 30-5-43 610S 19-9-43 CAC ops 14-11-43 ros 316S 25-12-43 118S 27-4-44 313S 21-7-44 611S 3-10-44 61OTU 12-10-44 BAFO CommSqn 13-9-45 Reid Sigrist refurb to Portugal 6-2-47
BM533 Vb CBAF M45 FF 17-4-42 39MU 18-4-42 302S 3-5-42 ? FAAC 5-5-42 129S 9-6-42 FAAC 15-6-42 41S 14-7-42 lost on sortie landed Wexford Eire out of fuel 21-8-42
EN766 Vb CBAF M46 5MU 28-4-42 41S 11-6-42 FACA 25-7-42 2USAAF 22-8-42 RNDA 28-3-44 ASTE 4-6-44 64S 10-6-44 53OTU 17-7-44 577S 14-6-45 Bellylanded in error Woodvale 12-7-45 SOC 21-7-45
W3848 Vb 2070 EA M45M FF 11-9-41 8MU 11-9-41 111S 22-9-41 FAAC 29-5-42 41S 22-8-42 122S 14-3-43 222S 'ZD-P' 19-5-43 67GrpUSAAF 2-11-43 HAL 16-6-44 1661CU 29-11-44 SOC 27-12-45 Coded JU-H

[98] **End Note: Curtiss Corner**

Though this picture is of BU-M of 80 Sqn RAAF, it may not be A29-1161, rather its predecessor, A29-618 BU-M, lost in March 1945, but all A29-6**s had white tails.