



# ADF-Serials Telegraph



# Welcome to the ADF-Serials Telegraph.

Articles for those interested in Australian Military Aircraft History and Serials

***Our Editorial and contributing Members in this issue are:***

*John Bennett, Gordon Birkett and Garry Shepherdson (Acting Editor – final fling)*

***Additional contributions in this issue are from:***

*Alf Allen.*

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1. We, the contributors, do this as a hobby, for free. Each of us devotes our own time (and at times money) into researching topics of Australian Defence Force (and closely related) aviation history for the benefit of this site. We do it to enhance the historical record and to correct errors or inaccuracies that may have crept into the historical record over time.
2. Plagiarism is NOT acceptable – by contributors or by people subsequently using information that they've gained from an issue of the ADF-Serials Telegraph. If a contributors article contains anything that is either: not their personal opinion, their own experience or some "fact" that a reasonable person would consider to be general knowledge, then it must be referenced. Referencing is important because it shows a reader the source of the information being used so that, if a reader so chooses, they may go to the same source to verify the information or, if they have developed an alternative point of view to an article, to offer an alternative interpretation based on the same information. Furthermore, it provides sources to direct readers in their own research, if they want to expand on the subject, or to further their new research into subjects that they haven't quite got to, but always meant to write about.
3. If a reader disagrees with the veracity of information presented in an issue of the ADF-Serials Telegraph, they may challenge that information, but please, in an open and professional manner, by submitting a referenced counter-argument.
4. Any photographs that a contributor wishes to be included in their article must have its source credited.

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- The Aircraft of the Papua New Guinea Defence Force (PNGDF) website at <http://www.adf-serials.com/PNGDF.htm>

## In This Issue:

Page#	Title
4	Order. Excerpt from the Commonwealth of Australia Gazette No.65.
5	RAAF WWII in Colour, No.12 – RAAF Wapitis by John Bennett.
45	Notes Regarding No.1 and No.2 Squadron Beaufort's by Garry Shepherdson.
65	Winging-It with the Deltas by Alf Allen.
82	A Moment in Time, Memories from my Service by Shep.
85	Curtiss Corner: P-40E A29-64 by Gordon Birkett.
93	End Notes

In keeping with celebrating the centenary of the RAAF this year, it is fitting to note that this issue of ADF-Serials Telegraph coincides with the 100<sup>th</sup> Anniversary of the RAAF. On 13<sup>th</sup> August, 1921, the Australian Air Force officially became the Royal Australian Air Force. (See next page).

### **Special Thanks:**

Alan Flett and Dave Robson for providing photographs of the Deltas.

### **Note:**

If you have a story or an article that you might like to be included in a future edition, have a read of the "ADF-Serials Generic House Rules" (on p2) and contact us via the "question" email address, below.

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**ORDER**

Commonwealth of  
Australia to wit,  
**FORSTER,**  
Governor-General.

By His Excellency the Governor-  
General of the Commonwealth of  
Australia.

**W**HEREAS it is enacted by the *Defence Act 1903-1918* that the Governor-General may, subject to the provisions of that Act, raise, maintain and organize in the manner prescribed, such Permanent and Citizen Forces as he deems necessary for the defence and protection of the Commonwealth and of the several States :

And whereas by Order made on the twenty-fourth day of March, One thousand nine hundred and twenty-one, and published in the *Gazette* of the thirty-first day of March, One thousand nine hundred and twenty-one, the Governor-General aforesaid ordered that a force, to be called the Australian Air Force, be constituted as part of the Australian Military Forces :

And whereas His Majesty the King has been graciously pleased to approve of the said Force being designated as the "Royal Australian Air Force" :

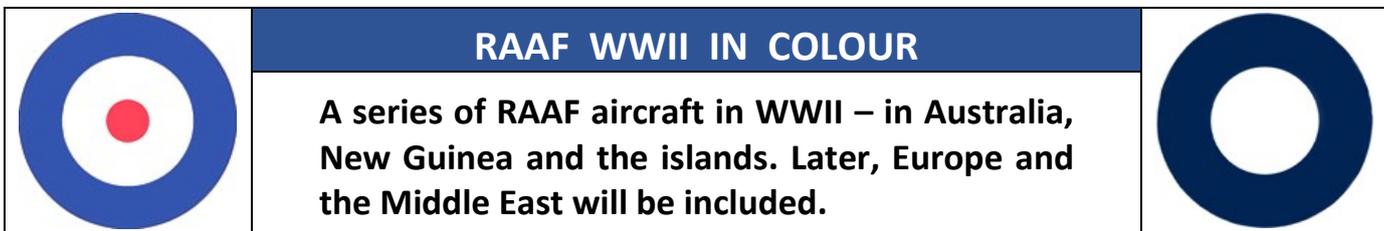
Now therefore I, Henry William, Baron Forster, the Governor-General aforesaid, acting with the advice of the Federal Executive Council, do hereby order that as from the date of this Order the said Force shall be designated as the "Royal Australian Air Force" instead of being called the "Australian Air Force."

Given under my Hand and the Seal of the Commonwealth,  
at Brisbane, this thirteenth day of August, in the year  
(L.S.) of our Lord One thousand nine hundred and twenty-  
one, and in the twelfth year of His Majesty's reign.

By His Excellency's Command,

G. F. PEARCE, Minister of State for Defence.

2d.; Yearly, 30s. 4d.



## No.12 – RAAF Wapitis

by John Bennett 2021

Approaching the end of its first decade, the RAAF was still mainly equipped with types of wartime vintage. The ‘war weary’ *Imperial Gift* aeroplanes had been built for the First War, and it was never the intent to operate these machines for so long.<sup>1</sup> As 1930 approached, the last “Gift” aircraft in service were D.H.9As, which the RAAF Air Board, somewhat rudely and ungraciously, had submitted: “The Board consequently recommends that D.H.9As and Liberty engines be no longer used. The above recommendation, if approved, *will rid the RAAF of the last of the Gift aircraft equipment.*”<sup>2</sup> **RAAF re-equipment** was belatedly underway:

- the trainer supplied as part of the Gift was the WWI instructional stalwart, the Avro 504K, which the RAAF had already replaced, evaluating the **D.H.60 Cirrus Moth** in 1926 and then buying its first batch of twenty in 1928;
- for the operational fleet, the RAAF ordered the **Westland Wapiti** army-cooperation bomber, a natural progression for army-cooperation tasks and survey roles from 1929 as it used many D.H.9A components; and
- as a fighter to replace the S.E.5a, the **Bristol Bulldog** commenced the RAF interwar ‘silver wing’ era fighters, and the RAAF’s token order of only eight as trainers in JUN 1929 – for delivery in MAR 1930<sup>3</sup> – was purely to keep fighter tactics skills alive, within ‘Fighter Squadron’ in 1 Flying Training School (1FTS).

The RAAF operational squadrons in 1929 – 1SQN at Laverton and 3SQN at Richmond – soon had their new Wapiti workhorses put to some grueling remote duties, starting in SEP 1929 in supporting and escorting the Western Australian Centenary Air Race from Sydney to Perth. Distant aerial photographic surveys and inland humanitarian searches became synonymous with RAAF Wapitis in the 1930s, just as D.H.9As had done the previous decade.



[Colourised from IWM HU1883]

**Brand new A5-1 at the Westland Aircraft Works at Yeovil, FEB 1929 – the early Mk.IA configuration engine and undercarriage**  
 All 28 RAAF Wapitis of the first batch, ordered in 1928, were the Mk.IA of composite wood and metal construction with this early configuration Jupiter VIII engine, without the later engine exhaust collector ring and two long pipes below the front fuselage. A later image of A5-20 at the factory shows the subsequent split-axle undercarriage fitted by Westland at Yeovil.

The Wapiti proved a practical acquisition for the RAAF – its ‘General Purpose’ capability made it possible to limit the number of aircraft types for a small service operating at a time of economy<sup>4</sup> – and when replaced in the operational squadrons in 1935 the same philosophy was used in selecting the Hawker Demon. With War, the Wapiti became a sturdy advanced trainer until more suitable types became available, as it was said that their rugged construction gave them a reputation of lovely old machines that were safe planes to crash in!

## REPLACEMENT OF THE IMPERIAL GIFT – LATE 1920s

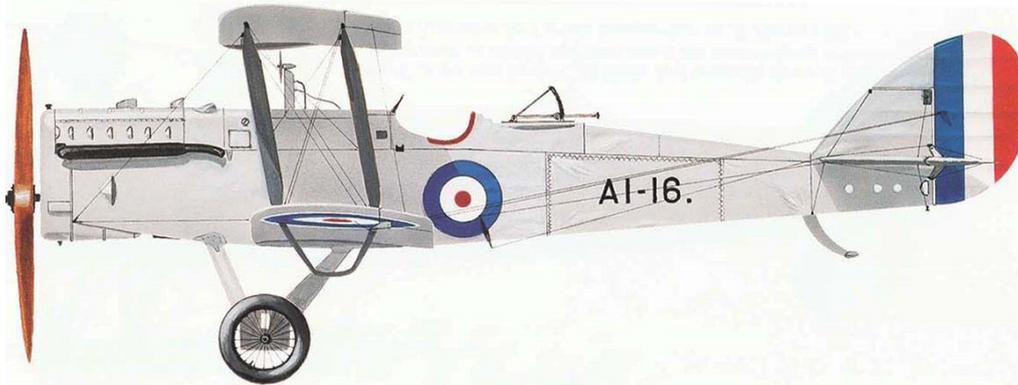
From 1929, in the face of the global Depression, there was a slow modernisation of the RAAF, from its First War origins and equipment, to a contemporary force. Like other countries, Australia was operating on tough financial constraints balanced against keeping abreast of core aviation developments.



Photo by Grahame Higgs

[Grahame Higgs, adf-serials]

**1928** D.H.60 Cirrus Moth – two had been evaluated at Point Cook over 1926-27 (**A7-1 and A7-2**), followed by an order for 20 in JAN 1928 (**A7-3 to A7-22**) and delivered later that year.<sup>5</sup>



[Matt Dudley, The Imperial Gift]

**1928** The D.H.9A was replaced by the Wapiti – ordered in OCT 1928 with first deliveries in APR 1929. All 28 Wapiti Mk.IAs of this initial order were delivered to Melbourne by NOV 1929. The RAF Specification for the replacement General Purpose aeroplane, won by the Wapiti, had specified the maximum use of D.H.9A components, with the requirement for the performance and load-carrying capability to be superior to that of the D.H.9A.<sup>6</sup>



[RAAF image 000-148-378]

**1929** In JAN 1929 an RAAF order for six Bristol Bulldogs, soon increased to eight, was approved to replace the remaining Imperial Gift S.E.5as in 'Fighter Squadron' of 1FTS, which enabled the older type to be retired by MAY 1929.<sup>7</sup> Six Mk.II Bulldogs were ordered on 17 JUN 1929 at a cost of £3,750 each and two additional machines were ordered later that year. The first was delivered for assembly by 1 Aircraft Depot (1AD) at Laverton in MAR 1930.<sup>8</sup>

Order No <sup>9</sup>	Date of Order	Variant	Delivery <sup>10</sup>	RAAF Details
O.I.242	14 OCT 1928 Order for 28 <sup>11</sup>	Mk.IA / IIA <sup>[1]</sup>	<b>APR 1929 - NOV 1929</b> First 6 delivered to Melbourne late APR 1929 aboard MV <i>Taranaki</i> , then batches of 4 in MAY, JUN, JUL, SEP, OCT, 2 in NOV	<b>A5-1 to A5-28</b> 1AD Laverton for assembly and testing, then 1SQN Laverton, 3SQN Richmond and 1FTS Point Cook. Mk.IA upgraded to IIA over 1930-31. <sup>12</sup>
O.I.308	DEC 1929 Initially order for seven, increased to ten <sup>13</sup>	Mk.IIA	<b>OCT 1930 – MAR 1931</b> <sup>14</sup> First delivered Melbourne OCT and DEC 1930, last delivered MAR 1931 on SS <i>Mataranka</i> .	<b>A5-29 to A5-38</b> Delivered as single aircraft to 1AD, with the Jupiter VIII engine.
O.I.574	20 JUL 1937 Order for six used RAF Mk.IIAs	Mk.IIA	<b>FEB 1938</b> Five delivered to Melbourne aboard SS <i>Somerset</i> .	<b>A1-39 to A1-43</b> ex-RAF K2257, K2262, K2265, K2268 and K2287. K2286 was lost on docks when loading in UK. <sup>[2]</sup>

**Notes:**

1. In the RAAF, the earlier aircraft Mk.IA were upgraded to Mk.IIA standard with all-metal construction, revised engine configuration, and split-axle undercarriage.
2. The final order for six ex-RAF Wapiti IIAs were from RAF Contract 109870/31 (K2252-K2288), but this was reduced to five deliveries, when the sixth (which may have become A5-44) was destroyed in a dockyard accident in the UK while being loaded onto a ship for delivery to RAAF.



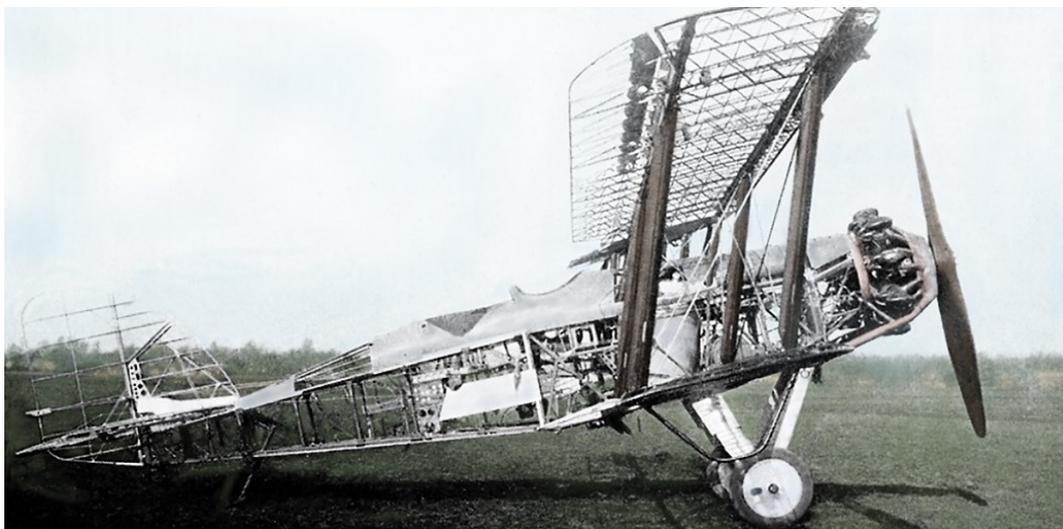
[The Third Brother rear cover]



[RAAF image]

**RAAF Wapiti IIA showing the unpainted all-metal forward fuselage, and here with R/T comms for the observer**

The Wapiti Mk.I began with fully wooden construction (excepting the metal front fuselage and rudder) and used many D.H.9A components. The Mk.II had a redesigned engine exhaust configuration and was of all-metal construction using square duralumin or steel tubing, including for the wings, with the side aluminium panelling/cowling extending further, to aft of the pilot's cockpit.

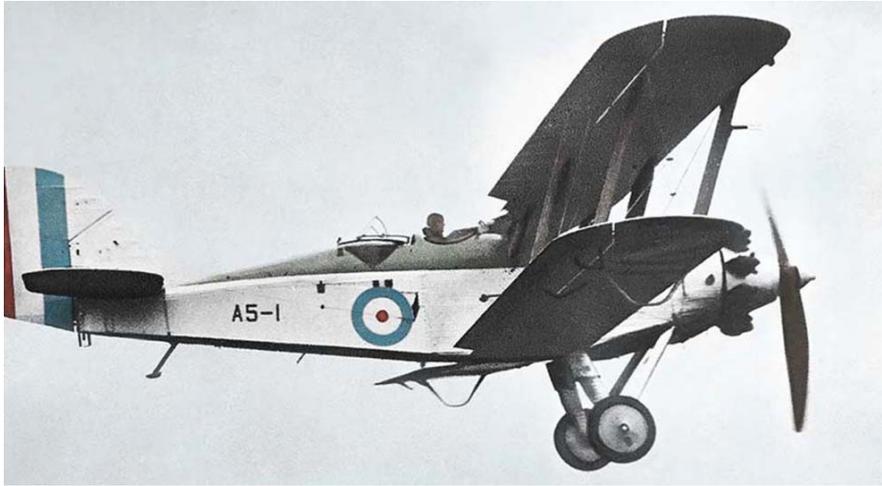


[Colourised from Profile No.32, p.7]

**The bare all-metal airframe of the Wapiti IIA**

## WESTLAND WAPITI PRODUCTION

Total Wapiti production at Westland's Yeovil plant was **565**, detailed below, with a further 27 built under licence in South Africa, but the figure of **558** is also sometimes quoted.<sup>[1]</sup> Discrepancies occur due to aircraft not delivered.<sup>[2]</sup> Further confusion can be caused by 'double-counting' (for instance with one aircraft having two designators), or some Wapitis completed as the Westland Wallace.

Variant	Contract <sup>[3]</sup> /Order Details	Number	Serials	Details
<b>Mk.I</b> 26/27	Spec 26/27 Contract No.790464/27	1 25	J8495 J9078 to J9102	Prototype, first flew JUN 1928. Jupiter VI engine. J9082 and J9083 dual control
<b>Mk.IA</b>	<b>RAAF O.I.242</b>	28	<b>A5-1 to A5-28</b>	Jupiter VIII and HP slots became standard.
				
<i>[Colourised from RAAF image]</i>				
<b>Mk.II</b>	Contract No.813644/27	10	J9237 to J9246	Metal variant pre-production of Mk.IIA.
<b>Mk.IIA</b> Spec 1/29, 12/30, 16/31	Contract No.805331/27 Contract No.834731/28 <b>RAAF O.I.308</b> Contract 880023/28 Pt.1 880023/28 Pt.3 915859/29 933744/29 933744/29 21422/30 30386/30 109870/31 <b>RAAF O.I.574</b>	1 35 <b>10</b> 34 45 17 37 36 56 100 69 <b>[440]</b>	J9247 J9380 to J9414 <b>A5-29 to A5-38</b> J9481 to J9514 J9592 to J9636 J9708 to J9724 J9835 to J9871 K1122 to K1157 K1254 to K1309 K1316 to K1415 K2252 to K2320 <b>(A5-39/A5-43)</b>	Mk.IIA prototype. <b>The Mk.IIA was the standard production variant, 430 built with RAF serials. RAAF follow-on order of 10.</b> J9503 dual control. J9606 to Westland Wallace (Spec 19/32). Subsequent (J9725) were finished as Mk.V. J9864 rebuilt as Wallace K3676. 6 to RCAF; 1936 18 more ex-RAF Mk.IIAs to RCAF. For RAF army-coop in India. 9 converted to Wallaces K4012/K4020. Some converted to Wallace. <b>5 to RAAF in 1937: K2262, 2265, 2268, 2286, 2287</b>
<b>Mk.III</b>	South Africa, also designated Mk.IB for SAAF	4	P601 to P604	1929 order, plus a further 27 built under licence in South Africa (P605 to P631).
<b>Mk.IV</b>	Spain	(1)		Longer fuselage for Spain (not proceeded with). Led to Mk.V, del'd to China in 1931 (VR-HAC).
<b>Mk.V</b>	Contract 915859/29	35 1 1	J9725 to J9759 <sup>15</sup> G-AAWA VR-HAC	Follow-on from Mk.IIA run, Panther engine. Mk.V proto, became civilian demonstrator. Modified from Mk.IV to China in 1931.
<b>Mk.VI</b> 17/31	Contract 109869/31	16	K2236 to K2251	Jupiter IXF dual control trainers. K2245 to Wallace. K2248/K2251 reportedly not delivered.
<b>Mk.VII</b> 19/32	Original designator for the Wallace	(1)	J9725	Developed from Mk.V prototype (G-AAWA), became the Wallace prototype K3488.
<b>Mk.VIII</b>	China	4		Ex Mk.IV, Armstrong Siddeley Panther IIA.
		<b>565</b>		

### Notes:

[1] Credible sources quote **565** as the total: Andrews, p.9; *The Encyclopedia of Aircraft* David C. Eyre. However, the 558 total is provided by James p.158; also by *WESTLAND WAPITI – Tangmere Museum* ([tangmere-museum.org.uk](http://tangmere-museum.org.uk)). James has erred with 28 RAF Mk.IIs (instead of 25), so his total should be less three, at 555. This difference of ten from 565 probably totalled 430 Mk.IIAs – but these 430 Mk.IIAs were all RAF serialled, and with the ten RAAF Mk.IIAs being additional, this gives a **total of 440 Mk.IIAs**.

[2] The Mk.VI is quoted as 16 total, and sometimes as 12, as four were possibly not delivered, and perhaps not built.

[3] Contract numbers are from [Westland Wapiti \(rafcommands.com\)](http://WestlandWapiti.com)

## RAAF Selection of the Wapiti

The 'war weary' *Imperial Gift* aircraft had served the RAAF during the 1920s, and built during the First War there had been no intent for these machines to be operated for so long. In the late 1920s, the RAAF set about to select its first 'Service' (i.e. operational) aircraft replacement for a Gift aeroplane, which would replace the D.H.9 and the D.H.9A. But this selection was not to be straight forward. The list of types considered by the RAAF for its new army-cooperation/light bomber replacement was relatively long and more complex than what had been imagined. The following aeroplanes were the options for selection, with the ultimate outcome.<sup>16</sup>

- **Armstrong Whitworth Atlas** – six had been approved on 27 JUN 1927 to re-equip 3SQN at Richmond. On 9 AUG 1927 the Atlas order was increased to eight. Composite construction, and although in use by the RAF, it was for army-cooperation only and not deemed suitable as a bomber. Cost quoted at £4550 each (with engine) based on an order of eight.
- **De Havilland D.H.65 Hound** – RAAF Chief WGCDR Williams had proposed on 19 JUL 1927 the purchase of Hounds. A D.H.65J built to RAAF specifications (fitted with a 520hp Bristol Jupiter VIII F engine) flew in JUN 1928. Option of composite or metal construction, the cheapest of the contenders at £4300 each (plus £110 each for auto-slots).
- **Fairey III F** – being considered in JUN 1928, with good performance and metal construction, but was the most expensive of the contenders at £3520 each (exclusive of engines) based on an order for 48.
- **Westland Wapiti** – good performance, composite construction at £4550 each (with engine) for the wooden version, and £5200 all metal.



[Colourised from *De Havilland Aircraft*, p.266]

### The D.H.65J Hound which matched the RAAF Specification, powered by the Bristol Jupiter VIII F radial

On 3 JUL 1928 the D.H.65J, the RAAF selected the Hound, and £150,000 was funded for 32 aircraft. As the Hound had failed to win an RAF production contract, it was completely redesigned to the Australian specification with the Jupiter VIII F radial, and flew at the DH Stag Lane factory during the first week of JUN 1928.<sup>17</sup> But...only a month after RAAF selection, on 2 AUG 1928, WGCDR Williams reviewed the selection, and changed it to the Wapiti!

## Development of the Wapiti

The Wapiti was designed to **Air Ministry Specification 26/27**, that had drawn entries from eight designs. Comparative trials were held by the RAF over MAR and JUN 1927, included some of those above. These included the Gloster Goral, Fairey Ferret, de Havilland Hound, Vickers Valiant and Bristol Beaver, until the Westland Wapiti was selected in AUG 1927. *Alliteration was obviously a requirement!* The prototype Wapiti (J8495) had wings, tail surfaces, ailerons and interplane struts which were all D.H.9A components and flew in MAR 1927. However, design flaws had necessitated increases in the size of the fin and rudder. The first 25 Wapitis were the Mk.I for the RAF which were wooden construction, with the exception of the forward fuselage which was a structure using square duralumin tubes.<sup>18</sup> This initial order of OCT 1927 was followed by over 500 more Wapitis before production ceased in 1932.<sup>19</sup>

An initial order for **28 Wapiti Mk.IAs** for the RAAF was announced on 12 OCT 1928. The Hound had not been ordered by the RAF – so the Wapiti cost was fixed (with no RAF orders, the Hound was not), Wapiti spares would be cheaper, and significantly the Westland composite construction would aid the introduction of metal construction to the RAAF to assist tradesman training.<sup>20</sup> When considering the purchase of new aircraft, the RAAF preferred types that had been ordered by the RAF, and if possible having the Australian requirement included in the RAF contract with the

manufacturer. The RAAF Chief of Air Staff, WGCDCR Williams, recalled “this resulted in both Services getting a better price from the larger contract, but the manufacturers did not like it.”<sup>21</sup>

This number of 28 for Australia had been determined by the higher cost of the Hound (of which 32 had been budgeted) and limited to £150,000 that had been allocated.<sup>22</sup> But fortunately the Wapiti was a natural progression for the RAAF as a bomber, but more practically for army-cooperation and increasing survey roles, as it was sturdy for remote operation to become standard with the RAF. Just before the Wapiti went into production, the Handley Page company produced an automatic wing slot fitted to the upper leading edges, which opened when the wings approached stalling speed. Handley Page received a separate royalty payment whenever these slots were fitted to an aircraft by other manufacturers. William recalled:<sup>23</sup>

We decided to have the slots fitted to our Wapitis. Although we were able to include our order for the aircraft in the Air Ministry contract placed with Westland Aircraft Works, manufacturers of the Wapiti, Frederick Handley Page demanded that he deal direct with the Commonwealth in regard to royalties for the slots, and asked a nice round figure of £20,000.

I was able to ascertain from the Air Ministry the amount they paid in slot royalties and the number of aircraft it covered and from this found that Handley Page was asking us just about double the price...We offered £7500 but this was refused...I was able to get a settlement at £12,000.



*[Colourised from Profile No.32, p.4]*

#### **Wapiti prototype J8495 with an early tail design with fin fillet in 1927**

**Wapiti IA** was a unique Australian variant, improved on the RAF Mk.I – specifically for the RAAF and powered by a more powerful 480hp (353 kW) geared Bristol Jupiter VIII radial engine. The Mk.I, of which only 25 were built for the RAF, had a square-section metal tube forward fuselage and wooden rear fuselage, with wooden wings and fabric covering, and were powered by the direct drive 420hp (313kW) Jupiter VI. The more powerful RAAF Mk.IA with the Jupiter VIII 9-cylinder air-cooled geared radial, with increased wing stagger, would provide the basis of the Wapiti Mk.IIA. Also, during the production run of these 28 Mk.IA, later aircraft received a divided-axle main undercarriage, and would be retrofitted to the earlier aircraft in Australia, becoming the production standard for future Wapitis

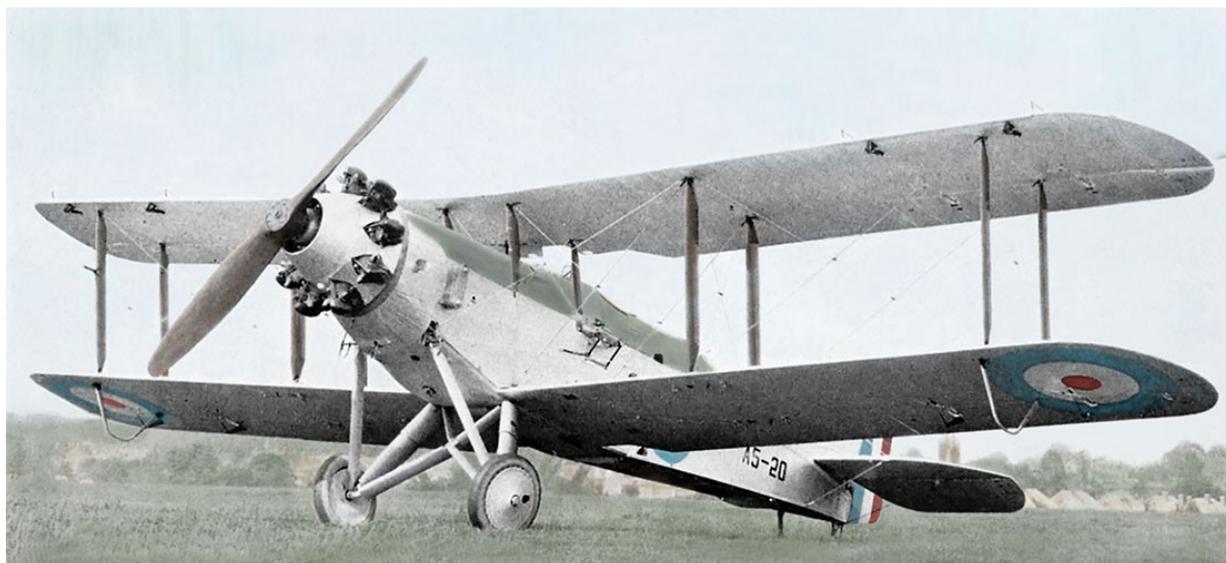


*[Colourised from Flight image]*

#### **FEB 1929 A5-1 Mk.IA and RAF J9247 Mk.IIA flown by Westland test pilots**

RAAF machine **A5-1** was flown by well-known Westland test pilot Harald Penrose, who became Westland’s Chief Test Pilot in 1931. The RAF Wapiti **J9247** was the first Wapiti Mk.IIA.<sup>24</sup> A5-1 has the original straight axle, and J9247 has the revised split axle.

Rollout of the first Australian Wapiti was on 21 FEB 1929 at the Yeovil factory, with 200 guests to witness its christening by Lady Ryrie, wife of the Australian High Commissioner.<sup>25</sup> The first six of 28 Wapiti Mk.IAs (**A5-1 to A5-6**) were shipped to Melbourne aboard SS *Taranaki*, arriving on 26 APR 1929. The first flight in Australia was at 1 Aircraft Depot (1AD) in MAY 1929.<sup>26</sup> The remainder of the order (**A5-7 to A5-28**) was delivered to 1AD over JUN-NOV 1929.



[Colourised from Profile No.32, p.5]

**MAY 1929 A5-20 Mk.IA at Yeovil with split-axle wheels – probably the first RAAF Wapiti with this redesigned undercarriage**

The earlier images of **A5-1** at Westlands show the original straight axle, fitted to some of this batch when delivered to Australia. Aircraft up to at least **A5-14** had this, before being retrofitted at an RAAF Aircraft Depot. Soon after receipt in Australia in 1929, both 1SQN **A5-10** and 3SQN **A5-14** still had the original straight axle – probably **A5-20** was the first factory Mk.IA installation. Images of 1SQN **A5-15** in later 1929 show the new split undercarriage, probably being retrofitted in Australia by 1AD.

### Upgrading to Mk.IIA Standard

More Wapitis were to be ordered by the RAAF, the all-metal structure **Wapiti IIA** variant built to Specification 16/31. This was the major production version after the ten pre-production Mk.IIs, with 430 Mk.IIAs built for the RAF. Like the fuselage, the wing too was all metal, built to the same D.H.9A design. At the end of DEC 1929, the RAAF Air Board recommended acquisition of **an additional seven Wapitis** and ten engines – the Jupiter VIII was specified in this order to be the improved Jupiter VIII F – with these Mk.IIA variants to re-equip 1FTS at Point Cook.<sup>27</sup> In early 1930, this was **increased to ten aircraft (A5-29 to A5-38)**, the last arriving on SS *Mataranka* in MAR 1931.



[Colourised from RAAF image]

**MAY 1929 First four 3SQN Wapiti IAs at Richmond, from left A5-2, A5-5, A5-3 and A5-6, fitted with message retrieval hooks**

The 3SQN Unit History records: 16 MAY 1929 the first Wapiti was allotted to the Squadron and ferried by the CO (SQNLDR Lukis), and three other Wapitis allotted during the month.<sup>28</sup> From the individual aircraft histories: **A5-2** arrived at 3SQN 16 MAY 1929, **A5-5** and **A5-3** both delivered to 3SQN on 23 MAY, and **A5-6** received by 3SQN 25 MAY 1929.<sup>29</sup>



[Colourised from AWM P02413.015]

### 1930 Wapiti A5-10 – with at least partial Mk.IIA upgrade at Essendon

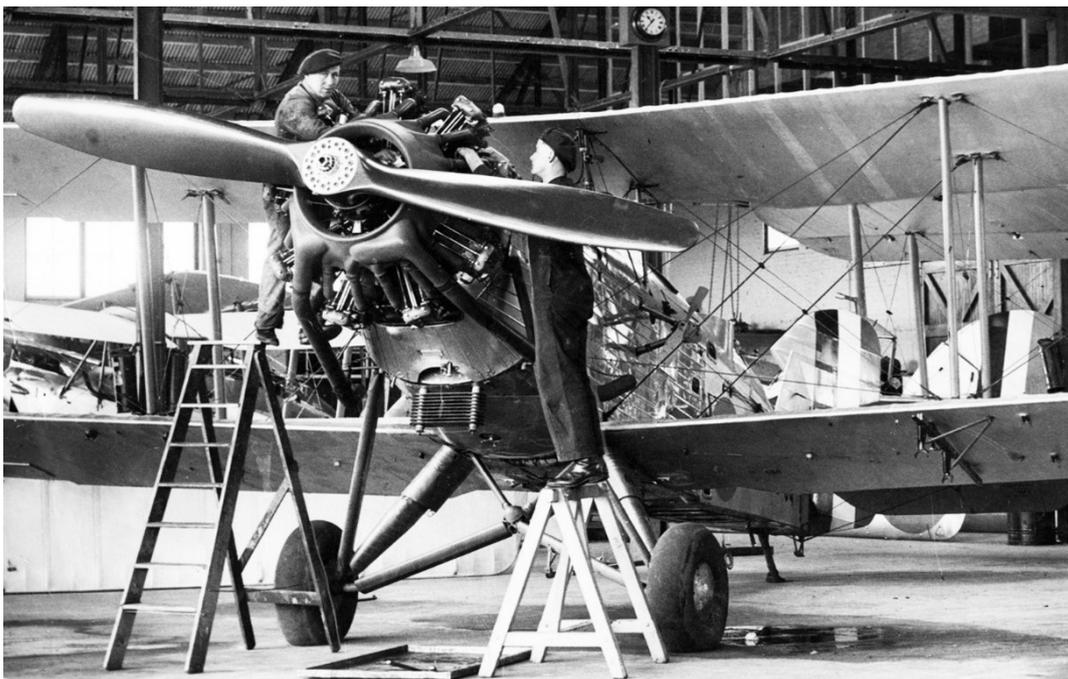
Above, **A5-10's** Jupiter VIII radial's revised configuration with exhaust collector ring and exhaust pipe on both sides of the lower fuselage. The split-axle undercarriage has also been fitted, presumably at RAAF's 1AD, as it is assessed that **A5-20 was the first production Mk.IA** to be fitted in UK at the factory. By this early stage, it is unlikely the airframe has had its wooden structure replaced by metal components, which was the other major definitive stage of the upgrade. The *Blue* stripe leading on the rudder is significant – it dates this image *prior to* 1 JAN 1931, and the AWM caption does place this at Essendon VIC in 1930.



[RAAF images]

### Wapiti Mk.IIA upgrade at 1 Aircraft Depot, RAAF Laverton

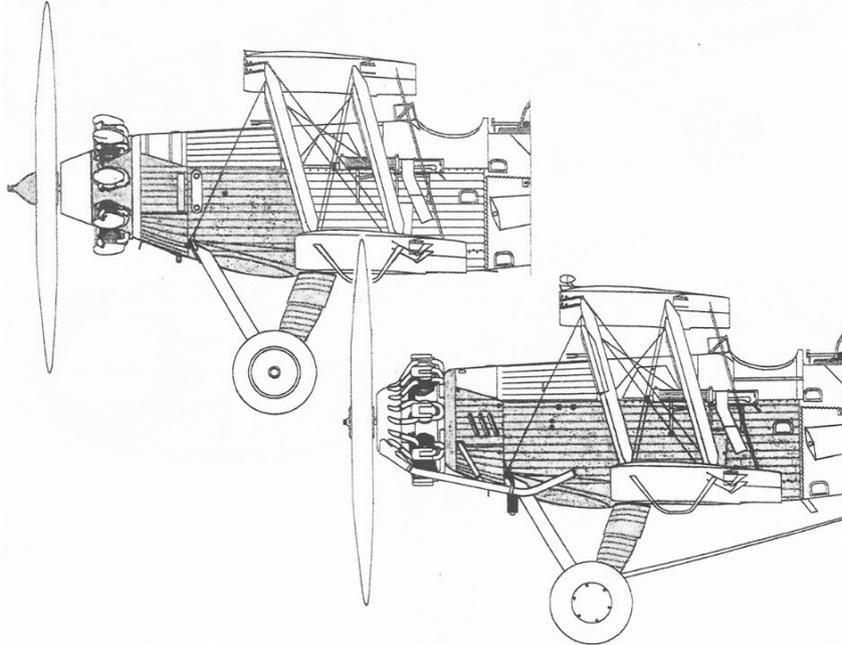
The date of these images is not recorded, but is probably during the Mk.IA upgrade to Mk.IIA standard c1930. In the left image, the painting of the metal structural components that have been fashioned is being undertaken. Right, the bare metal fuselage and mainplanes structures are visible in the foreground, in the background the revised engine configuration is being positioned.



[Peter Malone image via Britmodeller]

### A beautifully detailed image of RAAF Wapiti Mk.IIA A5-34

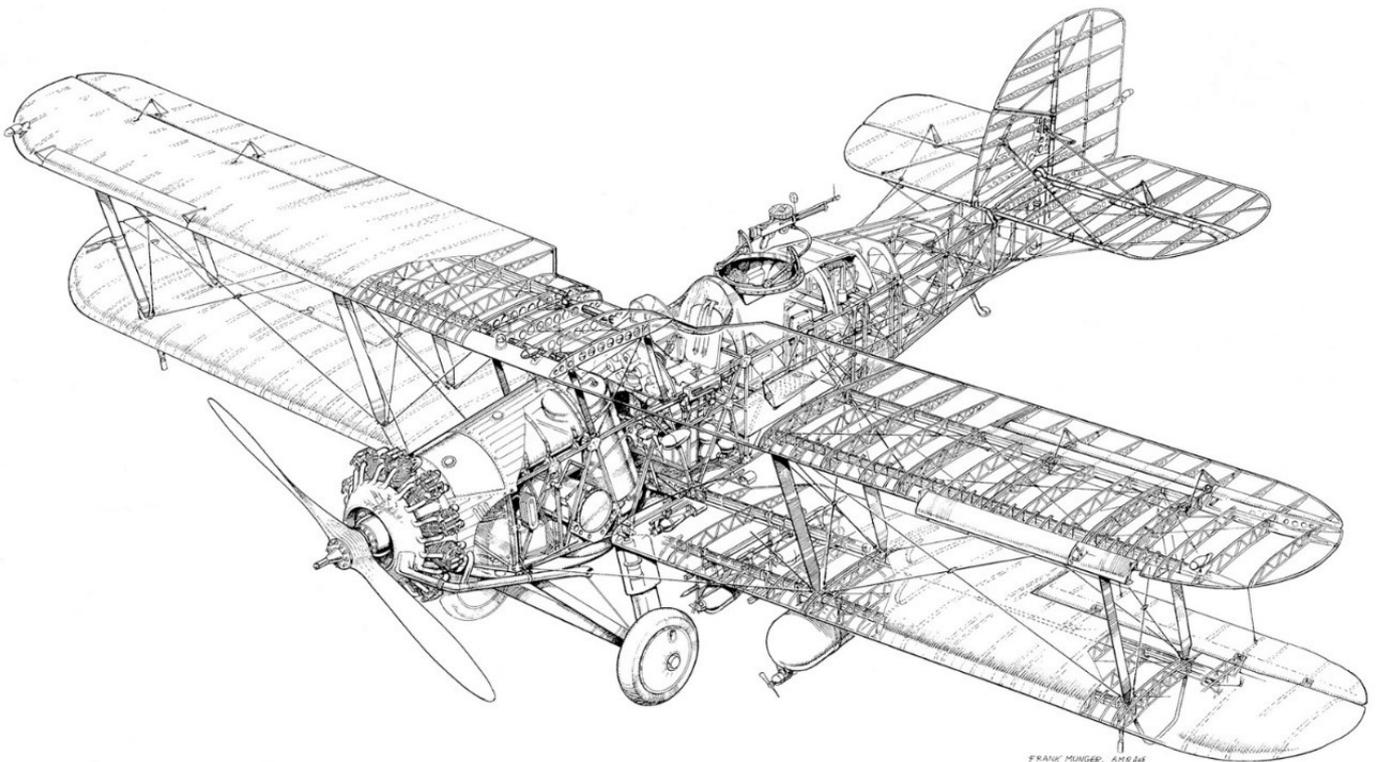
**Detail showing difference between un-painted (ie bare metal) nose surfaces on Wapiti Mk Ia and Wapiti MkIIa.** The shaded areas are the un-painted surfaces. There is a panel seam line directly behind the leading interplane strut, aligning with it and therefore hidden by it. On the Mk Ia examples, the metal fuselage panelling aft of this seam line was Aluminium-painted. On the Mk IIa examples all the metal fuselage panelling was un-painted. The undercarriage oleo strut fairing often has an unpainted appearance in old photos, but not always. Those un-painted metal surfaces had a reflective, polished appearance (atleast when the aircraft were younger). ■



[AHCB 66, p.9]

AHCB #66 details the extension of the aluminium panelling along the side of the Mk.IIA, the seam of the Mk.IA between metal and wood was hidden behind the leading interplane strut. The aluminium panelling had longitudinal corrugations fluted at 4" pitch for rigidity.<sup>30</sup> The Mk.IIA view shows the larger balloon tyre, overwing navigation lights, and the removal of the Vickers-Potts oil cooler.

The Wapiti **Mk.IA** was fitted with the geared Jupiter VIII (which had replaced the Mk.I's direct-drive Jupiter VI) and with direct exhaust ports. The **Mk.IIA's** geared Jupiter VIII/VIIIF engine with a longer gearbox, had an exhaust collector ring chamber that fed exhaust gases away from the cockpit, along two long pipes below the front fuselage.



**Westland Wapiti IIA cutaway – Frank Munger**

Renowned cutaway artist Frank Munger kindly provided this image and one of the D.H.9A to me in 1995 during writing *The Imperial Gift* book. While the D.H.9A cutaway was used, the Wapiti had not been a *Gift* aeroplane. I am grateful to be able to use it now.



[Colourised alamy image]

**1934** All Wapitis had been upgraded in the early 1930s – here at Richmond CO 3SQN WGCDR Bostock with Mk.IIA Wapitis. WGCDR Bostock, CO 3SQN, had been promoted in MAR 1933 to also be the Station Commander RAAF Richmond, and carried out both commands. This Inspection was on 21 MAY 1934 by MAJGEN G W Barber, Director-General of Medical Services<sup>31</sup> – he held this role for the Army, RAAF and DCA until retiring in AUG 1934. By this stage all Mk.IA Wapitis had been upgraded to the Mk.IIA. Seen here too is the 3SQN metal badge (introduced with the Wapiti in 1929) that was carried by 3SQN Wapitis, and later Demons.

**Second-hand Wapitis.** With war approaching, there was a shortage of RAAF general purpose trainers that would be required before Anson and Wirraway ‘service trainers’ could be delivered. In JUL 1937 the Air Board was advised that six Wapitis were available from RAF surplus stocks<sup>32</sup> – these were Mk.IIAs, the definitive RAF variant of the Wapiti, from the final RAF production order for Mk.IIA Wapitis (K2236 to K2320).<sup>33</sup> Although it was not RAAF policy to buy second-hand aircraft, the offer was too good to refuse – the six were purchased at a total cost of £3100, which included spares and six engines (quite attractive considering that the cost of just one Hawker Demon was £4850). Eventually only five of these were received in Australia as one (K2286) was written-off in UK in a portside loading accident. The five ex-RAF aircraft that arrived in Australia in FEB 1938 were K2257, K2262, K2265, K2268 and K2287. After several months of refurbishment at 1AD, these were serialled **A5-39 to A5-43**, and issued to 1FTS during 1938.



[Colourised from RAF Commands.com]

**Mk.IIA K2262 in RAF service c1933-1936**

The serial number tie-up of the five ex-RAF Wapiti IIAs accepted in 1938 remains unknown – but prior RAAF practice had been to allocate numbers sequentially in numerical order of the previous identity, logically the five would be **A5-39 to A5-43** in order.<sup>34</sup>

# AIR BOARD.

Referred by AIR MEMBER FOR SUPPLY.

AGENDA No.

Date of Meeting

2069/1937.

Present

## SUBJECT

### PURCHASE OF USED WAPITI AIRCRAFT FROM AIR MINISTRY : OVERSEAS INDENT No. 574.

1. Information has been received from the Air Ministry that a number of Wapiti Mark IIA Aircraft, which have had limited use in the Royal Air Force, are available for disposal, and, following directions from the Air Board, our Liaison Officer negotiated with the Air Ministry with a view to ascertaining if six of these aircraft could be obtained at a sufficiently attractive price to warrant purchase on our behalf.

2. Our Liaison Officer has now advised that six Wapiti Mark IIA Aircraft, complete with Jupiter VIII engines and instruments, and with a limited range of maintenance spares, could be obtained for £200.--. each. These airframes have been flown for times ranging from 100 to 520 hours since new and four have flown approximately 250 hours since last reconditioning, while the running times of the engines since last complete overhaul range between 8 and 300 hours - the price of Wapiti aircraft when last purchased in 1929/30 was approximately £4,600 sterling, landed in AUSTRALIA.

3. While it is not the policy of the Air Board to purchase secondhand aircraft in normal circumstances, it is considered that these aircraft are in reasonably good condition and, apart from crashes, we may expect to get an average of 500 hours flying from them, without reconditioning. Moreover, the number of Wapiti aircraft now in use as advanced trainers at No. 1 Flying Training School has been reduced to an extent which will make it imperative to provide additional general purpose aircraft for advanced training within the next six months. It was proposed that this replacement would be made by transferring Demon aircraft (costing approximately £4,850 sterling, landed in AUSTRALIA) to No. 1 Flying Training School from Service Units, but this action is undesirable because of shortage of aircraft pending delivery of two-engined bomber aircraft for No. 2 and No. 4 Squadrons - therefore, if these six Wapitis could be obtained, it would tide the Service over until such time as aircraft on order from overseas come forward, or until the N.A. 16 type is in production locally by the Commonwealth Aircraft Corporation.

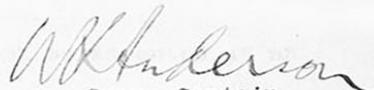
4. It is also proposed to offer the Air Ministry the sum of £250 for two spare Jupiter engines, with a range of maintenance spares or, alternatively, £500 for six spare Jupiter engines; if available, the latter offer would be more advantageous to us, but either alternative would be acceptable and it is proposed to leave the decision as to the alternative supply with our Liaison Officer and Air Ministry, according to what is available.

5. In view of all the circumstances, it is desired to recommend that six Wapiti aircraft and spare engines, as set out in detail in the accompanying Overseas Indent No. 574, be purchased through the Air Ministry at an estimated cost of:-

(a)	Six aircraft and maintenance spares.	...	...	£2,500.
(b)	(i)	Two Jupiter engines with spares....	...	£300.
	(ii)	Six Jupiter engines.	...	£600.
		Cost - 1st Alternative.	...	£2,800.
		Cost - 2nd Alternative.	...	£3,100.

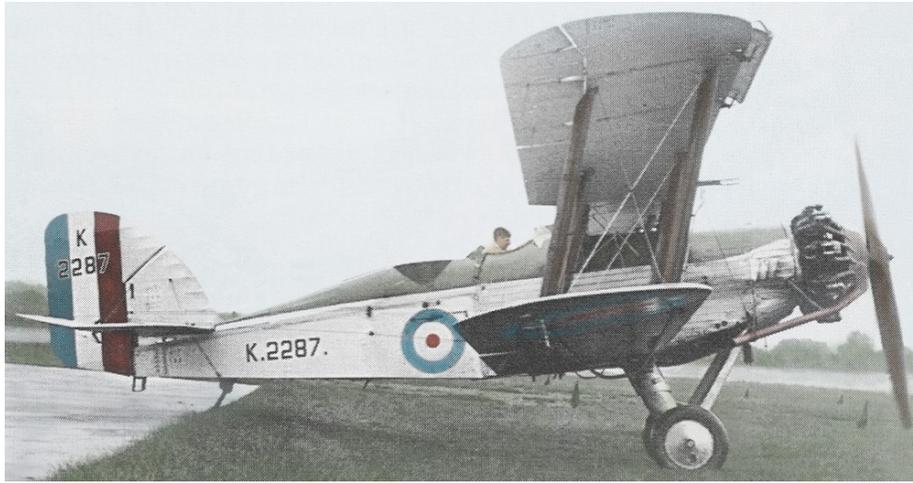
(All prices shown above in sterling, and allowance made for packing, freight and supplementary charges).

6. Ministerial approval to place the proposed Indent overseas will be necessary.



Group Captain,  
AIR MEMBER FOR SUPPLY.

7/7/37.



[Colourised from James p.152]

**K2287, another ex-RAF Mk.IIA to the RAAF for advanced training, may have become A5-43**

The RAAF order for second-hand RAF Wapiti IIAs in JUL 1937 had been prompted by Canada's acquisition of 24 ex-RAF Mk.IIAs over 1936-1937. Here the bulged spare-wheel stowage between the undercarriage legs can be seen, gained from RAF experience in its remote policing operations – the earlier RAAF Mk.IAs had also carried a spare on a further-aft centreline bracket.

**Later Wapiti Variants**

Although the Wapiti Mk.IIA was the most numerous and successful variant, there were small production runs of some later Wapiti versions for the RAF.

- The **Wapiti Mk.III** was basically a Mk.IIA built for **South Africa** and powered by the 480hp (353kW) Armstrong Siddeley Jaguar VI or 550hp (405kW) Armstrong Siddeley Panther IIA. Four were built by Westlands, and a further 27 under licence in the SAAF Workshops.
- The **Wapiti Mk.IV** was proposed for **Spain**, with a longer fuselage and powered by a 650hp (478kW) Hispano-Suiza 12N. This proposal was not continued, and the sole Mk.IV was used as the long-fuselage Mk.V prototype.
- The **Wapiti Mk.V** was the next major production for the **RAF**, the longer fuselage version with the 600hp (443kW) Bristol Jupiter XFA. Two civilian aircraft were used in Mk.V development, the sole Mk.IV (sold to China as VR-HAC in 1931), and a demonstrator G-AAWA. RAF production comprised 35 aircraft, serialised J9725 to J9759.
- The **Wapiti Mk.VI** was a dedicated dual control trainer for the **RAF** to Air Ministry Specification 17/31, was unarmed and powered by a 525hp (386kW) Jupiter IXF. 16 were ordered (K2236 to K2251), but apparently the last four K2248 to K2251 were not delivered. The last Wapiti was delivered to the RAF in AUG 1932.
- The **Wapiti Mk.VII** was the original designation of the **Westland Wallace**, with modified Mk.V G-AAWA becoming the prototype as K3488, and with 174 Wallaces being built over 1931-1936.<sup>35</sup>
- The Wapiti **Mk.VIII** was the final variant, built in 1931. It had been built as a Mk.IV and fitted with a Jaguar VI for demonstration to the Central Chinese Government. **China** bought four, powered by the Panther IIA.



[Colourised from RAF Commands.com]

**J9728 was a Wapiti Mk.V with the longer aft fuselage – see endnotes comment on longer fuselages**

**Oops!** Why did the Wapiti Mk.IV/V have a longer fuselage? While the prototype Mk.I J8495 was undergoing RAF testing, Westland discovered a length discrepancy between the rear structure and the wind-tunnel model. Alarminglly the entire 2ft (0.61m)-long rear fuselage bay had been omitted! But as RAF testing had been favourable, sssshh!, it was decided not to rebuild the fuselage, and the missing bay was not embodied until the later variants.<sup>36</sup>

## THE 1929 GREAT TRANSCONTINENTAL AIR RACE

Soon after receipt of the first Wapitis in Australia in 1929, they had an unusual task. For the Centenary celebrations marking the first 100 years since the establishment of the Swan River Colony at Perth, the **Western Australian Centenary Air Race** (also known as the **East-West Air Race**) was held. The 3,940 km air race was from Sydney to Perth, and commemoration festivities held in Perth between 28 SEP to 12 OCT 1929. The 17 aircraft teams were due to leave Mascot/Sydney on 29 SEP, but were delayed a day by weather. The route from Mascot was to Junee, **Essendon**, Nhill, **Parafield**, Kimba, **Ceduna**, Cook, **Forrest**, Rawlinna, **Kalgoorlie**, Tammin and Maylands/Perth. (Overnights **bolded.**) The RAAF Wapitis supported the civilian competitors, acting as escorts and providing logistics



[Geoff Goodall Aviation site]



[Museum of Perth]

**Forrest:** Horrie Miller's D.H.9 VH-UHT front, a support Wapiti down the line **Maylands:** fastest overall Hereward de Havilland

700 people had turned out at Kalgoorlie to see the competitors off on the final leg. Victorian aviator, Charlie Pratt and copilot Jim Guthrie were both seriously injured when their D.H.60G Gipsy VH-UKX "Corio" crashed near Baandee, 230km east of Perth. The first of the 14 teams finished the 6-day race at Maylands on Friday 5 OCT. The £1000 **handicap winner** was Horrie Miller in his D.H.9 VH-UHT. The £300 **fastest overall time** prize was won by MAJ Hereward de Havilland in a DHA Company D.H.60G 'Special' G-AUIQ in 22 hours 50 minutes 23 seconds – he flew the route solo (the only one to do so) in his specially-modified "Black Hawk". The only RAAF pilot competing in the race was Charles "Moth" Eaton, placed 6th (in borrowed D.H.60M VH-UKC), one hour behind the 5th placegetter the legendary Jerry Pentland (D.H.60G G-AUV), a WWI ace who would later serve in the RAAF during WWII.<sup>37</sup>



[Colourised from SLSA B60416]

**OCT 1929 Parafield:** New Mk.IA A5-15 in 1SQN markings, with beautiful clean spoke wheels and split undercarriage

A5-15 presumably at Parafield on the westward (outbound) leg of the 1929 Perth Centenary Air Race as RAAF Wapitis provided escort and logistical support to the 17 civilian aircraft that departed Mascot on 30 SEP 1929. A5-15 had only been received in Australia in JUL 1929, as shown by its pristine silver wire wheels. The split undercarriage became standard on aircraft during delivery of the first batch of 28 Wapiti IAs; A5-15's probably fitted soon after arrival. Later aircraft (A5-20 for one) had the split undercarriage fitted by Westland. When delivered, the Mk.IA had the early Jupiter VIII radial configuration (without the huge engine exhaust collector ring and two long pipes below the front fuselage) and top mainplane leading-edge Handley Page slots.

**More reading on the Air Race:** [1929 WA Centenary Celebrations — Museum of Perth](#); [Western Australian Centenary Air Race - Wikipedia](#) [The Great Transcontinental Air Race Sydney - Perth September 30 - October 5 1929 - CAPT.CHARLES 'CHIC' EATHER \(RET.\) \(chingchic.com\)](#)

## RAAF OPERATIONS

A **General Purpose (GP) aeroplane** was particularly attractive from a financial standpoint, even though wartime experience had showed the greater effectiveness of aircraft specialising in a particular operational role.<sup>38</sup> The GP aeroplane was called upon to perform a variety of roles – air displays and races to engender an airmindedness in the general population, the core air power role of army cooperation, and probably the most important for the RAAF in the 1930s, aerial survey of Australia’s remote centre. The Wapiti was soon described as “ideal for desert flying in Australia”.<sup>39</sup> As soon as the RAAF had received its first Wapitis they were tasked with shepherding duties for the 1929 Transcontinental Sydney-Perth Air Race, and a large amount of tasking was participation in a variety of air races and aerial pageants across the nation, for example the 1930 South Australian Aerial Derby at Parafield.



*[The Register, Adelaide, Mon 24 MAR 1930]*

### A5-23 was winner of the South Australian Aerial Derby on 22 MAR 1930

The crashed aircraft shown in this newspaper article was D.H.60G Gipsy Moth VH-ULB, which crashed at Parafield on 22 MAR 1930. This Moth was ultimately repaired, and impressed into RAAF service in 1940 as A7-98.

Waving the flag for the population at city and regional air displays would often may involve ‘air races’ between aircraft around a fixed local course. As early as 1930, Wapiti **A5-12** was modified for a speed advantage with a faired over rear cockpit. The largest airshow planned in Australia was the 1938 RAAF Aerial Pageant held at Flemington Racecourse, seen by a crowd estimated at 170,000. This was repeated a fortnight later for the Sydney audience on 23 APR 1938 at RAAF Base Richmond, seen by an estimated crowd of 150,000.<sup>40</sup> For both of these major events a mass formation of twelve Wapitis performed.



*[Colourised from RAAF PR image 5513-111839244]*

Flemington Racecourse on 9 APR 1938 – taxiing at a slow canter down the long straight is Wapiti A5-3, a Cadet and a Seagull

## Army Cooperation

The role of **Army Cooperation** was taken over by 1SQN Laverton and 3SQN Richmond from the *Imperial Gift* D.H.9s and D.H.9As. This core training was often curtailed by the demands of a public relations, but 3SQN at Richmond really cemented its role as the cooperation squadron for the Sydney-based Army units, which would result in its deployment to the Middle East with the 2nd AIF in 1940. Wapiti armament comprised a fixed single forward-firing 0.303 Vickers Mk.II machine gun fitted on the port fuselage side, and a 0.303 Lewis Mk.III fitted on a Scarff ring in the rear cockpit. Combinations of up to 580LB (263kg) of bombs – 20LB, 112LB or 230/250LB – could be carried on universal racks under the wings or fuselage.<sup>41</sup> 1SQN became a fighter-bomber unit, and these 1SQN and 3SQN roles were retained on re-equipping with the Demon in 1935.

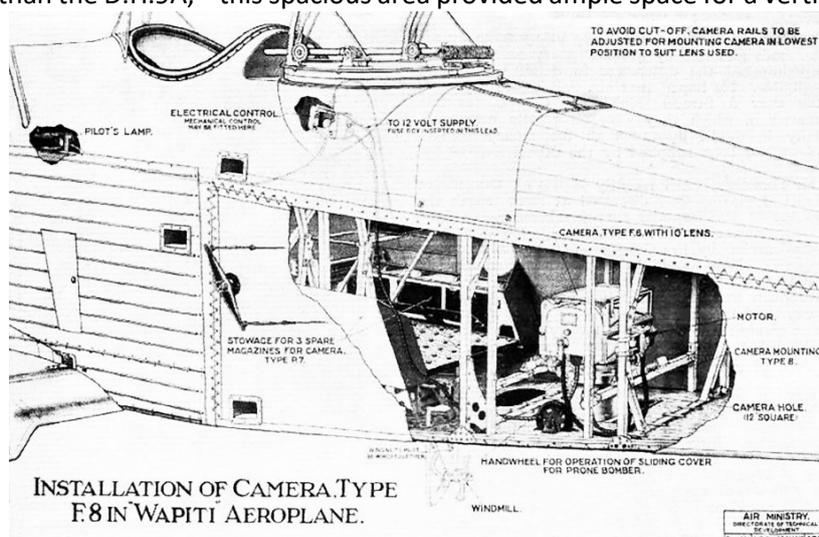


**AEROPLANE VERSUS INFANTRY — SPOTTING ADVANCING TROOPS.**  
The picture was taken at Green Hills, Liverpool, last week, during the manoeuvres of the 5th Infantry Brigade. It shows a Wapiti machine from No. 3 Squadron, Richmond, observing members of the 4th/3rd Battalion as the infantry seek cover in the trenches.

[RAAF image]

### Army Cooperation in the 1930s – 3SQN Wapiti exercising with Sydney-based troops

The RAF requirement had been for the Wapiti to replace the D.H.9A – RAF D.H.9s had been unwanted and retired by JUL 1919<sup>42</sup> – and this meant a performance and capabilities superior to the D.H.9A. The RAF mission for the D.H.9A and Wapiti was Army Cooperation which was subsumed by police actions in Iraq, India and Afghanistan. These operations required the Wapiti to be armed with guns and bombs, and equipped with the message pick-up hook that was hinged to the undercarriage cross-axle and operated by the gunner. The Wapiti fuselage was 5½” (14cm) wider and 12” (30cm) deeper than the D.H.9A,<sup>43</sup> this spacious area provided ample space for a vertically-fitted aerial camera.



[Air Ministry Diagram A.D.1021]

### Fairchild/Williamson F.8 Aerial Camera Vertical Installation in the Wapiti

The camera was installed in the floor behind the rear cockpit, with a ventral sliding aperture 12-inches square which was opened for photography. The F.8 was the forerunner of the Fairchild K.17 aerial camera, which served in the RAAF with 1PRU during WWII.

## Wapiti Survey Tasking

In addition to non-defence activities, the RAAF was called upon to carry out tasks in the national interest – these could be search and rescue, ‘showing the flag’ or civil airmail services. But none was as important as the aerial surveying of Australia’s immense unmapped expanses. By the end of 1928, probably in anticipation of the new GP aeroplane, CAS Williams announced: “A Plan is being prepared now to map from the air many sections of Australia, which will redeem it from being, as it is at present, the worst mapped country in the world”.<sup>44</sup>

**Survey 1929.** Emphasising the immediacy of surveying requirements, in AUG 1929 two recently-arrived Wapitis of 1FTS (A5-7 and A5-8) supported a primarily ground-based water and geological survey in Central Australia. Conducted under the auspices of Adelaide University, the survey covered 30,000 square miles (78,000 sq km) in nine flights out of Broken Hill, Birdsville, Alice Springs and Birdsville, with constant wireless two-way ground comms.<sup>45</sup>

**Aerial Surveys 1930.** For the first photographic aerial survey to be undertaken in Australia, on 17 APR 1930 two Wapitis from 1SQN and 3SQN deployed to Tasmania, flying to Stanley via King Island. The mission was to provide the Tasmanian State Forestry Dept with accurate maps, and the survey covered a 900 square mile (2300 sq km) area between Rocky Cape and Arthur River.<sup>46</sup> In SEP 1930, two Wapitis of 1SQN completed aerial photographic coverage of 500 square miles (1300 sq km) of the NSW/Vic border area around Albury, supported by an experimental photographic lorry and trailer, producing the first military map in Australia based to a significant extent on aerial photographs.<sup>47</sup> Photography then remained a standard 1SQN Wapiti task, while visual reconnaissance was used to assist the Victorian Forests Commission with controlling bushfires. From FEB 1930, the RAAF planned patrols over designated forest areas, included as RAAF training flights, and conducted by Wapitis to report fires with locations transmitted to RAAF Laverton, who then advised the Forestry Commission in Melbourne.<sup>48</sup> Spotting flights then continued over the summer months for years until civil aircraft began to be more widely used.



[RAAF image]

### SEP 1930 inch-to-the-mile military mapping around Albury

**Oilfield Surveys 1932.** During 1932, three oil search survey tasks were carried out by 1SQN Wapitis. In JAN 1932, two aircraft surveyed in southern Queensland around Roma, and when returning to Laverton were hit by a severe storm on an overnight stop at Bourke. The extensive damage to **A5-27**, shown below, was able to be repaired at 1AD. In SEP 1932, two Wapitis (A5-35 and A5-36) undertook an oilfield search in Western Australia, and in NOV 1932 two 1SQN Wapitis conducted an oilfield survey in Tasmania.



[Colourised from Third Brother p.426]

### 1 FEB 1932 Wreckage of the two Wapitis hit by a gale at Bourke, A5-27 foreground

**A5-27** was more robust than this image of its damage at Bourke in FEB 1932 may suggest. After repair, on 1 MAY 1936 it hit a fence on landing and was stored with lower mainplane damage. But as it had flown an incredible 2000 flying hours since receipt in NOV 1929, it remained in storage until approved for conversion to components in MAY 1939.<sup>49</sup>

### North Australian Survey Flight

To round out 1932, in DEC Wapitis were called in on a search and rescue in the West for the D.H.50 VH-UEM of WA Airways Ltd, which was commencing a prospector survey of the ranges at Lasseter Reef in search of gold.<sup>50</sup> Meanwhile the RAAF was active in planning the mapping of the North, and in AUG 1933 a Government committee was formed to examine the photographic air survey to further Australia's national development to avoid haphazardness and uncoordinated effort.<sup>51</sup> In MAY 1934, the Commonwealth Government announced that a complete aerial geographical and geophysical survey of northern Australia would be carried out by the RAAF. This brought a reaction from the private flying companies. The magazine *Aircraft* at the time applauded the idea but commented: "The RAAF is ..... simply not equipped with proper personnel or material for such an expedition ..... only established aerial survey companies can do the job. Obviously, the only and proper way is for the Government to call tenders among private organisations".<sup>52</sup>

Although the RAAF was intent on forming an Air Survey Unit, this was blocked by Civil Aviation dissent in favour of using commercial companies. At a standstill, the Federal Government and those of WA and QLD later in 1934 formed a jointly-funded three-year effort, to permit about 80,000 square km to be surveyed. The tenders received in FEB 1935 showed the economy of the RAAF undertaking the task.<sup>53</sup> The North Australian Survey Flight (NASF) was formed from 1SQN at Laverton, deploying first to Cloncurry in **APR 1935** with Wapitis A5-37 and A5-34, and later to Alice Springs and Port Hedland. A5-34 was replaced by A5-32 due to ongoing engine problems, and NASF continued surveying around Darwin, and then Queensland coastal areas on return. Arriving back at Laverton in SEP 1935, NASF had photographed 3470 square miles (9000 sq km) in 515 flying hours.<sup>54</sup>



[AWM P02307.024]

### 3SQN personnel of the North Australian Survey Flight (NASF) 1936, led by FLTLT Bill Hely

The Report concluding the NASF operations highlighted that this was the largest aerial work ever undertaken by the RAAF, but recommended because of the inhospitable terrain (with an absence of safe landing spots) that twin-engined aircraft should in future be used. From APR 1936, the RAAF trialled twin-engined cabin aircraft – the Gannet A14-1 and D.H.89 Rapide A3-2 – which would replace the Wapiti for photo survey. 1SQN operated from its base at Cloncurry with A14-1, and 3SQN from Port Hedland with A3-2. After A3-2 forced landed in the Northern Territory desert, and was lost for ten days, badly damaged it was shipped back to Richmond and replaced in MAY by two Wapitis until they were returned in NOV 1936. Future survey work was undertaken by the Communications & Survey FLT from **MAY 1937**, and supported by Demons.<sup>55</sup>

By the mid-1930s, aerial photography had become the basis for topographical map production in Australia.<sup>56</sup> Up to the outbreak of War, many areas in northern Australia were photographed, ultimately by Ansons, mapping at a scale of 1:20,000 for the NAS project. The work of the NASF became truly significant by producing up-to-date maps to support military operations once northern Australia came under enemy attack from 1942.

## A5-1 – OUR FIRST WAPITI, IN UK 1929

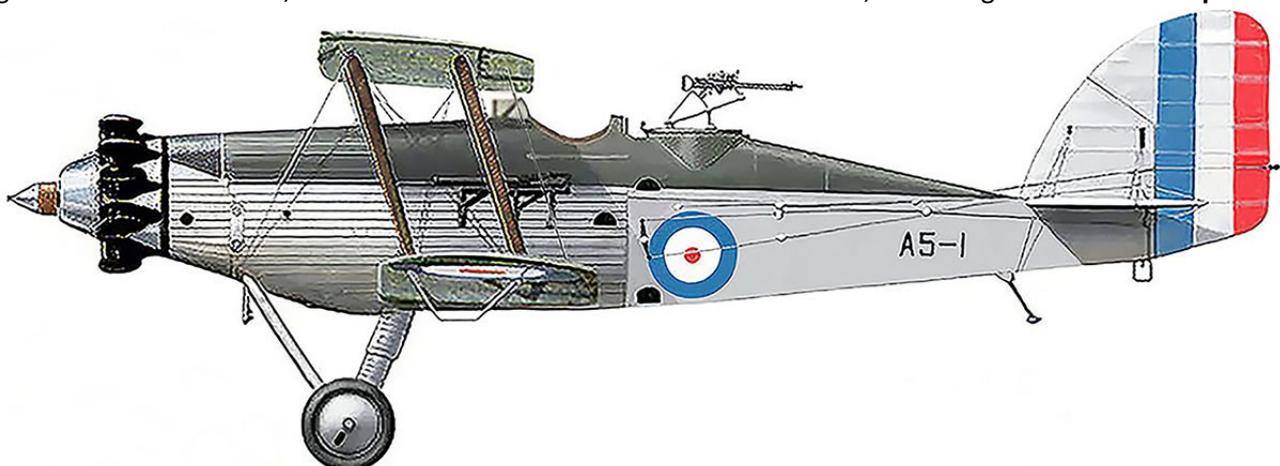
**A5-1** – when posing at **Westland Aircraft Works at Yeovil** on acceptance in 1929. It was delivered to Melbourne – aboard MV *Taranaki* with A5-2 to A5-6 in APR 1929, assembled by 1AD at Laverton. The early Wapitis replaced the earlier 'Gift' machines with 1SQN at Laverton, 3SQN at Richmond, and 1FTS at Point Cook.



[Colourised from IWM HU1883]

A5-1 does not have the split undercarriage, which were replaced on the early aircraft in Australia over 1929-1930 as part of the Mk.IIA upgrade. Its upper decking in *Grey Green* is definitely darker than aircraft later in service, and possibly the lighter shade could be due to a lighter shade paint and not totally caused by fading.

The service history of **A5-1** shows the ruggedness of this type. Serving with 1SQN, on 11 SEP 1929 its engine failed, safely completing a forced landing at Laverton. Then, after participating in the **Western Australian Centenary Air Race** over SEP/OCT 1929, on 17 JUN 1930 with 1FTS it had a partial seizure of its Jupiter engine which damaged the airscrew and forward fuselage, forced landing at Point Cook with minor injuries to the pilot. On 11 AUG 1930 it crash landed at Point Cook following another seizure of the same engine, with serious damage to the airframe and minor injuries to the trainee pilot. Over AUG 1930 to JAN 1931 it was with 1AD undergoing repair (and possibly the Mk.IIA upgrade was completed). Back with 1FTS, on 26 MAY 1931 the undercarriage collapsed on landing, with damage to the lower mainplanes, but the trainee pilot was uninjured. After repair by 1AD, on 7 SEP 1932 it taxied into soft ground which tipped the aircraft onto its nose with damage to the airscrew and engine bearers. Once returned again from 1AD, it served with 1FTS for several massed flypasts during 1934, suffered an engine failure on 18 FEB 1935, and had a ground collision with Moth A7-48 on the tarmac at Point Cook on 26 MAR 1936. A5-1 participated in the 1938 Aerial Pageants at Flemington and then at Richmond, but suffered a heavy landing and damage on 19 SEP 1938. Taxying into soft ground on 7 SEP 1939 and tipping on its nose, after repairs, in FEB 1940 it was recommended for ground instructional use, so was issued to 1ES Ascot Vale on 24 MAY 1940, becoming **Instructional Wapiti No.2**.<sup>57</sup>



## RAAF WAPITI LOSSES

The Wapiti proved a robust and durable machine, suffering many forced landings and accidents that were repairable. An **accident to A5-24 circa 1930 shows field repairs**, which enabled its recovery presumably to Richmond, with a series of *adf-serials* images. **A5-24** was delivered to 1AD in OCT 1929, this repairable accident probably in 1930.



[Colourised from *adf-serials* images]

The following year on 16 JAN 1931, **A5-24** crashed at Exeter NSW and was written-off. Details of these write-off crashes below, with most converted to components (CTC), have been compiled from various sources.<sup>58</sup>

Date	Aircraft	Unit	Details
25 OCT 1930	<b>A5-29</b>	1AD	Brand new aircraft, probably on 1AD air test, crashed Altona Vic, written-off
16 JAN 1931	<b>A5-24</b>	3SQN	Crashed Exeter NSW, written-off
26 FEB 1931	<b>A5-20</b>	1SQN	Crashed Seymour aerodrome Vic army co-op exercise, 2 fatal, written-off
12 OCT 1932	<b>A5-10</b>	1SQN	Crash landed Daylesford Vic, crew slightly injured, aircraft w/o, recovered 1AD CTC 26 OCT 1932
23 OCT 1932	<b>A5-36</b>	1FTS	Had undertaken survey SEP 1936; crashed Point Cook Vic, written-off
6 FEB 1933	<b>A5-6</b>	1FTS	Midair with <b>A5-8</b> on finals Point Cook, crashed and burnt, 1 fatal, authorised to CTC 14 FEB 1933
6 FEB 1933	<b>A5-8</b>	1FTS	Midair with <b>A5-6</b> Point Cook, crashed and burnt, 1 fatal, authorised to CTC 14 FEB 1933
18 AUG 1934	<b>A5-13</b>	3SQN	Crashed near Londonderry NSW during gunnery exercise, 2 injuries, auth to CTC 12 SEP 1934
16 APR 1935	<b>A5-31</b>	1AD	Crashed Werribee Vic, structural failure post-servicing air test, 1 fatal
21 APR 1935	<b>A5-18</b>	1SQN	Crashed Mt Egerton, east of Ballarat Vic, 1 fatal, auth to SOC 27 MAY 1935
13 AUG 1935	<b>A5-15</b>	1FTS	Engine fail on take-off PCK and burst into flames, 1 fatal, 15 AUG 1935 auth for dump into sea
30 OCT 1935	<b>A5-7</b>	1FTS	Very fast landing at Echuca V, overturned and w/o, 1 serious injury, auth to CTC 10 NOV 1935
1 MAY 1936	<b>A5-27</b>	1FTS	Struck fence landing, parts retained but had reached 2000 flying hours, auth CTC 18 MAY 1939
26 MAY 1937	<b>A5-28</b>	1FTS	Crashed on student cross-country training exercise at Gunbower Vic, written-off
4 JUL 1937	<b>A5-2</b>	1FTS	Forced landed Macedon Vic, crew slightly injured, recovered 1AD auth CTC 20 JUL 1937
25 APR 1938	<b>A5-19</b>	3SQN	Forced landed in dust storm Whittlesea Vic, 1 fatal 1 serious injury, auth to CTC 23 MAY 1938
7 SEP 1939	<b>A5-1</b>	1FTS	Wheels sank in soft ground, 1ES 24 MAY 1940, became I/A.2 28 OCT 1940, scrapped DEC 1944
12 SEP 1939	<b>A5-4</b>	1FTS	Crashed Mt Buninyong Vic, crew slightly injured, 1AD 21 SEP 1939 for CTC, auth 13 OCT 1939
23 NOV 1939	<b>A5-26</b>	1FTS	Crash-land Point Cook, major damage to 1AD for repair, remained 1FTS CTC 11 JUN 1940
6 DEC 1939	<b>A5-35</b>	1FTS	Crashed on railway line west of Laverton Vic, fatal, written-off and scrapped
15 JAN 1940	<b>A5-32</b>	1FTS	Struck fence landing, major damage, became I/A.11 14 MAY 1940, 25 JUL 1940 to Eng School
18 JAN 1940	<b>A5-33</b>	1FTS	Extensively damaged, authorised for CTC 17 FEB 1940, 1AD 13 MAR 1940 and CTC 20 APR 1940
15 MAR 1940	<b>A5-11</b>	1FTS	Damaged heavy landing, issued 1ES 24 MAY 1940 to A/I.4 19 JUN 1940, but CTC 3 SEP 1940
1 MAY 1940	<b>A5-5</b>	1FTS	Stalled and crashed Point Cook, to ES 28 MAY 1940, became A/I.3 28 OCT 1940
10 FEB 1941	<b>A5-21</b>	1SFTS	Midair with <b>A5-39</b> near Werribee Vic, 1 fatal, destroyed and authorised CTC 24 FEB 1941
10 FEB 1941	<b>A5-39</b>	1SFTS	Midair with <b>A5-21</b> near Werribee Vic, 1 injured, destroyed and authorised CTC 24 FEB 1941

## THE 1935 CRASH OF WAPITI A5-7

In his autobiography *Black Jack*, GPCAPT Brian Walker describes his accident in Wapiti **A5-7** on 30 OCT 1935. He related how having recently soloed on the Wapiti, with some 60 flying hours total, and was doing well on his course, until he came to grief on his final cross-country, to Deniliquin in a Wapiti: <sup>59</sup>

**Thank goodness those lovely old aeroplanes were safe planes to crash in!** As a Cadet I had watched one dive-bombing and as the dives become steeper and steeper, an instructor behind me said, “Well, that’s no way to do your dive bombing, because that feller if he doesn’t watch out is going to bite the dust.”

And sure enough, very shortly after, the Wapiti, which was a plane that had a habit, if it was pulled out of a dive too suddenly, to continue to sink, or ‘splurge’, came screaming down, hit the dust just past the aiming mark, rolled across the aerodrome in a cloud of dust, bits and pieces flying off it, and a great big round thing bowled out from the front of it, which I later found was the engine.

The wreckage came to rest a hundred yards from where it hit. And all of a sudden the wreckage gave a heave and a figure got out and started running like blue blazes from the wreck. Then it stopped – skidding to a stop with legs out straight, like in a Mickey Mouse cartoon – then tore back and helped another figure out and they both went like hell.

You would think you’d learn from that, but when we all arrived at Deniliquin on this solo cross-country in the Wapitis, we were met not only by Eric Douglas, the Flight Lieutenant in charge of checking us in and supervising our return to Point Cook, but also by a man called Fellows who took us into town and gave us two or three schooners of beer for lunch which was, of course, strictly against all known rules.

Anyhow, we went back to Point Cook at ‘dot’ feet, dragging our wheels through various paddocks and lifting wings over trees. When we got to Echuca, I noticed there were two or three of our chaps climbing up and diving down on the aerodrome there. So silly Walker has to always put on the best display of all. Not that there was much to display to, except a couple of men and dogs standing around.



[Colourised from *Black Jack*, p.15]

### A5-7 Wapiti crash 30 OCT 1935 Cadet Brian Walker at Echuca

And I can remember my face being dragged along the dirt as the aeroplane skated on its side, wingless by this stage, until it dug its nose in, flipped over on its back and threw me out. I think I must have fallen onto the oil tank and there I was, barely conscious, both eyes slowly closing up. A couple of characters helped Brian [Waddy] get me into a car that came along and carted me off to hospital.

The rest of the course graduated at the end of that year shortly after I crashed, while I was sojourning in hospital. I went home to South Australia to recuperate, made a fairly good physical recovery and then went back ...and graduated entirely on my own in March 1936.



[Colourised from *adf-serials*]

### A5-7 turned right way up, with a ‘rescue’ 1FTS Wapiti A5-4 in the background

## EVOLUTION OF RAAF WAPITI MARKINGS

In past articles in this series, individual aircraft camouflage and marking details for the RAAF have covered from entry into service (markings often resulting from the origin of the aircraft), through RAAF operations, to final changes up to the end of the war. Below is a chronology of RAAF policy generically, and for the Wapiti specifically, from prewar *Aluminium* Wapitis, in a logical timeline up to the Wapiti's withdrawal from service over 1944 and 1945.

### Overall Colours

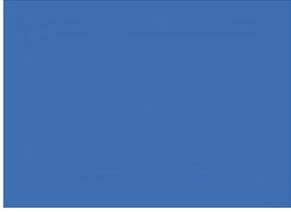
**Aluminium.** As Ian Baker says in AHCB #66, the standard overall colour scheme for all RAAF aircraft through the decade 1929 to 1939 was, to use the most common expression, 'silver'.<sup>60</sup> While aircraft continued to be mostly fabric covered in 'silver', metal surfaces of engine cowlings and nose coverings were typically unpainted, polished and shiny. The protective silver finish, due to pigmenting the finish with aluminium paste, was listed by the RAAF during the 1930s as *Aluminium*. As all treated external surfaces were to have a uniform silvery appearance, the aluminium pigment needed to be added to different formulations to produce dopes, lacquers, enamels, and so on – the appearance of *Aluminium* was therefore the same on all types of surfaces. BALM Australia specified *Aluminium Pigmented Cellulose Enamel* for wood and metal, designated K3/162, and *Aluminium Covering* for fabric was K3/168.<sup>61</sup>

**Grey Green.** The RAAF 1932 AGI No.35 specified a mid-toned *Grey Green* for Wapiti fuselage decking and cockpits when aircraft had been refurbished in Australia. This was a lighter shade than the darker colour when aircraft were delivered in UK.<sup>62</sup> AHCB #66 estimates this lighter shade as close to FS24159, or BS 639 *Light Slate Grey*. The BALM reference designates this as K3/75 *Grey Green Cellulose Enamel* for general aircraft maintenance as a decorative and gloss finish.<sup>63</sup> In the wartime '*Spartan Camouflage Colourings*', a paint colour chart for RAAF paints for Specification 3K5, K3/75 had been dropped but there are two colours which were close – these were K3/190 *Light Slate Grey*, and K3/189 *Dark Slate Grey*. The greenish olive in this latter colour came out more with weathering.<sup>64</sup>

<i>Spartan Camouflage Colourings</i>	B.S.C.639, instead of B.S.C.693	FS24159 Green
		
<p>This <i>Spartan Camouflage Colourings</i> wartime Australian paint chart for RAAF Specifications did not include K3/75 <i>Grey Green</i> Cellulose. These colours were for the <i>Temperate Sea Scheme</i> for aircraft such as the Walrus/Seagull V. This rendition of <i>Light Slate Grey</i> has noticeably less 'green' than B.S.C.639.</p>	<p>The British Australian Lead Manufacturers (BALM) <i>Synopsis of Aircraft Finishes</i> cross-references K3/75 <i>Grey Green</i> Cellulose (BALM S.13022) as the British Standard B.S.C.693, to RAF Specification DTD 63B. <b>But</b>, B.S.C.693 was a very light <i>Aircraft Grey</i> – is this therefore a misprint for B.S.C.639?</p>	<p>AHCB #66 compares the Wapiti <i>Grey Green</i> to the later FS595a/b standard "as 24159 is a good match"; and the B.S.C.639 (redesignated as BS381C-639) "<i>Light Slate Grey</i> was very close".</p> <p>These last two shades are probably in the ballpark.</p>

### National Markings

Our Hawker Demon article gave a detailed description of the change of colours of the roundel in the RAF and RAAF. Basically, the Imperial Gift aeroplanes were marked in the more durable *Red* pigment formulated in MAR 1918, and in 1922, the RAAF was specifying these colours as bright *Red V.R.3*, *White V.W.3*, and the outer ring *Blue V.B.2*.<sup>65</sup> This *Blue* was close to today's British standard of **BS381C-166 French Blue**, shown below, but this became obviously darker when in 1936, the RAF changed national marking colours *from* bright *Red* and bright *Blue* to 'dull night flying shades'.<sup>66</sup> The RAAF followed suit, with darker colours applied from 1937-38 – below is the original *Blue*.

		
<i>Blue sample from AHCB #1, K3/54</i> <sup>67</sup>	British Standard BS381C-166 <i>French Blue</i>	

**Roundels.** Wapiti fuselage roundels were 30" diameter, and upper and lower mainplanes 65" diameter.<sup>68</sup> The darker blue following the RAF change and introduced 1936<sup>69</sup> – and to the RAAF in 1937-38 – was noticeably darker than the earlier blue. Peter Malone has identified the darker blue as similar to the later BS381C-110 *Roundel Blue*, designated by the RAAF as K3/171, and the wartime RAAF roundel blue as *Dull Blue* K3/197.<sup>70</sup>

		
RAF gloss <i>Bright Blue</i> K3/171, later designated <i>Roundel Blue</i> BS381C-110.	Spartan Paints (Australia) K3/197 <i>Dull Blue</i> This is from the Spartan paint chart.	



[Colourised from RAAF image]

**A5-35 overhaul and marking colours being changed, this is probably at 1AD Laverton**

By this stage c1937, **A5-35** was serving with all Wapitis at 1FTS Point Cook, and this substantial hangar is probably 1AD Laverton. This image shows the Wapiti's rear access hatch removed, the Scarff ring still installed, and the detail of the Mk.IIA's aluminium panelling. Also an enlargement of the original image shows the chalk marks for marking on the serial number.

**Rudder Striping.** Rudder striping covered the whole rudder, which resulted in 13" width per coloured stripe. The order of the colours from the leading edge were changed at the end of 1930 – *Blue* was transposed from the leading edge to the trailing edge, now with *Red* leading. This was directed by RAAF Headquarters in OCT 1930, specifying the introduction by 1 JAN 1931.<sup>71</sup>

**Serial Numbers.** Serial numbers on the rear fuselage were the standard 8" height x 5" width, in 1" strokes. Serial numbers were not applied under the mainplanes (as was RAF fashion) nor across the rudder. The introduction of *training numbers*, from 1936-37, introduced some interesting variations. The large individual number 'last-two' could be part of the serial, or it could completely replace the normal serial number.

**Unit Markings**

Both 1SQN and 3SQN introduced squadron markings in 1929, but these were apparently unofficial and were removed during 1930. Squadron markings on RAAF aircraft did not appear again until 1936 on Demons, when 21SQN and 22SQN were marked with approved bands around the fuselage at the roundel – detailed in our last instalment.<sup>72</sup>

**Training Numbers**

Training numbers were introduced on RAAF training aircraft from 1936-37, and applied to Wapitis, Demons, Moths and Ansons – subsequently wartime trainers also received these large numbers. The training number would be the 'last-two' of the serial number for the Wapiti, but this could vary for other aircraft types. On the Wapiti this was marked on the rear fuselage, aft of the roundel, as part of the serial number and characters measured 20" x 12.5" (using a 2.5" stroke). Sometimes, this training number would replace the complete serial.

Year	Change	Policy and References
1929	Arrival of Wapiti IAs in Australia APR 1929: 1SQN and 3SQN.	No references found for Squadron markings
 <p data-bbox="485 539 1126 568"><b>The first Wapiti was handed over to the RAAF in FEB 1929</b></p> <p data-bbox="108 577 1501 645">This image shows the details that have so far been discussed – the original engine configuration and the straight undercarriage axle. With the markings, the upper decking is <i>Grey Green K3/75</i>, and the rudder striping with <i>Blue K3/54</i> leading.</p>		
1931	From 1 JAN 1931, the rudder striping colours were reversed, with <i>Red</i> at the leading edge.	<b>RAAF HQ Routine Order No.248, 24 OCT 1930.</b>
1935	Wapiti A5-37 to Antarctic, standard scheme, <i>Yellow</i> floats.	
1936	Withdrawal of Wapiti from frontline squadron service and relegated to training in 1FTS. From 1936-37, large 20" 'Training Numbers' were introduced.	
1937	RAF National Markings changed over 1936-37, from <i>gloss, bright, French Blue</i> to a <i>dull and darker shade of Blue</i> . While the RAAF maintained <i>gloss</i> roundels, with war the roundel colours were <i>dulled</i> – the blue becoming K3/197 <i>Dull Blue</i> .	No RAAF policy cited directing <i>bright</i> to <i>dull</i> colours, but aircraft produced in UK from 1937 should have had the dull and darker colours. While not specified, dull would have been the intent of the first RAAF camouflage AGI C.11, 22 SEP 1939.
1939	<p>Introduction of the 2:5 type-B to RAAF aircraft fuselages and upper surfaces – this became the <b>M.1</b> roundel in 1940.</p> <p>RAAF aircraft finishes, identification markings, and squadron code letters – training aircraft <i>Aluminium</i>. See Wapiti <b>A5-12</b>.</p> 	<p><b>RAAFHQ DTS 9/1/442 of 12 SEP 1939.</b></p> <p><b>RAAFHQ Aircraft General Instruction No. C.11, of 22 SEP 1939, 9/1/396(13A).</b> Drawn largely from <b>AMO A.154/39 of 27 APR 1939.</b><sup>73</sup></p> <p>This SEP 1939 AGI C.11 also listed Squadron Code Letters for the second line units – affecting the Wapiti was <b>Y</b> for 1FTS. (In OCT 1940, <i>Issue 3</i> of this AGI amended <b>Y</b> to Comm FLT.)</p>
1940	<p>RAAF camouflage colours at this stage were <i>Camouflage Green</i> and <i>Camouflage Brown</i>, developed from the RAF dark green and earth, and in <b>JAN 1940</b> <i>Yellow</i> for <b>Elementary Trainers</b> was introduced. None of these applied to Wapitis. Then the OCT 1940 policy AGI C.11 <i>Issue 3</i> detailed trainer schemes <b>E.1</b> (overall <i>Yellow</i>) and <b>E.2</b> (36" <i>Yellow</i> bands). Not applicable to Wapitis, but changes to National Markings:</p> <ul style="list-style-type: none"> <li>○ <i>Marking M.1</i> – <i>Blue</i> ring surrounding <i>Red</i> centre, fuselage and upper wings (i.e. type-B roundel).</li> <li>○ <i>Marking M.2</i> – a <i>Blue</i> ring surrounding <i>White</i> ring and <i>Red</i> circle, 1:3:5 (type-A roundel).</li> <li>○ <i>Marking M.3</i> – three colour <i>RWB</i> circle (i.e. <i>M.2</i>) surrounded by a <i>Yellow</i> ring, i.e. 1:3:5:7 proportions (type-A1 roundel).</li> <li>○ <i>Marking M.4</i> – <i>Red, White, Blue</i> stripes on the fin, stripes same widths as the rings of the roundel, <i>Blue</i> nearest rudder (Seagull only).</li> </ul>	<p><b>AGI No. C.11 A/L.5 of 26 JAN 1940, 150/4/658.</b></p> <p><b>RAAFHQ Aircraft General Instruction No. C.11, Issue 3, of 3 OCT 1940,</b> AFHQ file 1/501/329. Para2(i) stipulated grey serial number and code letters on camouflaged aircraft.</p>

	<p><b>Training Numbers.</b> RAAF AGI C.11 <i>Issue 3</i> in OCT 1940 had covered: “training aircraft are to have the last two numbers of their identification numbers painted on both sides of the fuselage forward of the national markings”.</p>	<p>AGI C.11 <i>Issue 3</i> in OCT 1940</p>
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**Training Numbers AGI C.11 Issue 3, OCT 1940**



*[Colourised from raf-in-combat]*

**Training numbers on A5-26, 33, 32, 37 and 5, 1FTS Point Cook**

The Wapiti 20” training numbers had been carried over from prewar 1FTS Point Cook training from 1936-37, and continued on with 1SFTS until about 1942. There was a little inconsistency in the way training numbers were applied to Wapitis – always the ‘last two’ which on the port side sometimes replaced the whole serial; sometimes retaining the ‘A5’ prefix (as with A5-5 here); and retained the whole serial on the starboard side.

<p><b>1942</b></p>	<p><b>JUN 1942. Deletion of Yellow from RAAF roundels.</b> This did not affect the Wapiti as <i>Yellow</i> had not been used on roundels or trainer bands.</p> <p><b>AUG 1942.</b> The RAAF <i>Technical Order, Aircraft General Instruction (AGI) No.C.11</i> was changed by <i>Issue 4</i> of 31 AUG 1942, for operational aircraft retained <i>Red/White/Blue</i> National Markings, dropped the <i>Yellow</i> outer ring.</p> <ul style="list-style-type: none"> <li>○ Upper surfaces – <i>Red</i> was dropped, so the roundel was specified as <i>Matt White</i> and <i>Matt Dull Blue</i> – the first directive for the so-called ‘Pacific’ Roundel.</li> <li>○ Fuselage sides – <i>Dull Red, White, and Dull Blue</i> roundels in the 1:3:5 proportions.</li> <li>○ Undersurfaces – the same <i>Dull Red, White, and Dull Blue</i> roundels but only for day fighters and trainers.</li> <li>○ Fin markings – <i>Dull Red, White</i> and <i>Dull Blue</i> stripes of the same width, with <i>red</i> leading.</li> </ul> <p><b>SEP 1942. Deletion of Red from all RAAF roundels.</b> On 19 SEP 1942 <i>Red</i> was dropped completely from National Markings – the RAAF ‘Pacific’ <i>Blue</i> and <i>White</i> roundel with the <i>White</i> diameter 3/5 (3:5) of the <i>Blue</i>. The <i>Yellow</i> surround of the ‘type-A1’ fuselage roundel had been overpainted in AUG 1942 with camouflage paint.</p>	<p>RAAFHQ DTS 280/42 of 18 JUN 1942, filed on 1/501/329(63A); 1TG signal T.670 19 JUN 1942; Signal School Point Cook A.50, 29 JUN 1942.</p> <p>RAAFHQ Technical Order AGI No.C.11 (<i>Issue 4</i>) of 31 AUG 1942.</p> <p>Colours were specified as <i>Matt Dull Red</i> K3/214 or K3/199, <i>Matt Dull Blue</i> K3/196 or K3/197.</p> <p>RAAFHQ message T520, file 0947/19 (30A), of 19 SEP 1942. Specified colours <i>Matt White</i> K3/170 and <i>Matt Dull Blue</i> K3/197.</p>
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<p><b>1943</b></p>	<p><b>JUL 1943.</b> For the Wapiti, if converted the roundel probably was the ‘type-A’ resulting in the 3:5 ‘Pacific’ roundel, but the 1944 image of A5-16 appears to be 1:2 proportions, with 30” diameter. <b>The last RAAF Wapitis were A5-42 and A5-16.</b></p> <div style="text-align: center;"> </div> <p align="center"><b>Comparison – ratio of the White to the Blue, 3:5 and 1:2</b></p>	<p>RAAFHQ AMEM DTS 1/501/329 SAS 13552, 8 JUL 1943, adopted from RAF AMO A.664/42, of 2 JUL 1942.<sup>74</sup></p>
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PREWAR 1 SQUADRON – 1929-1935

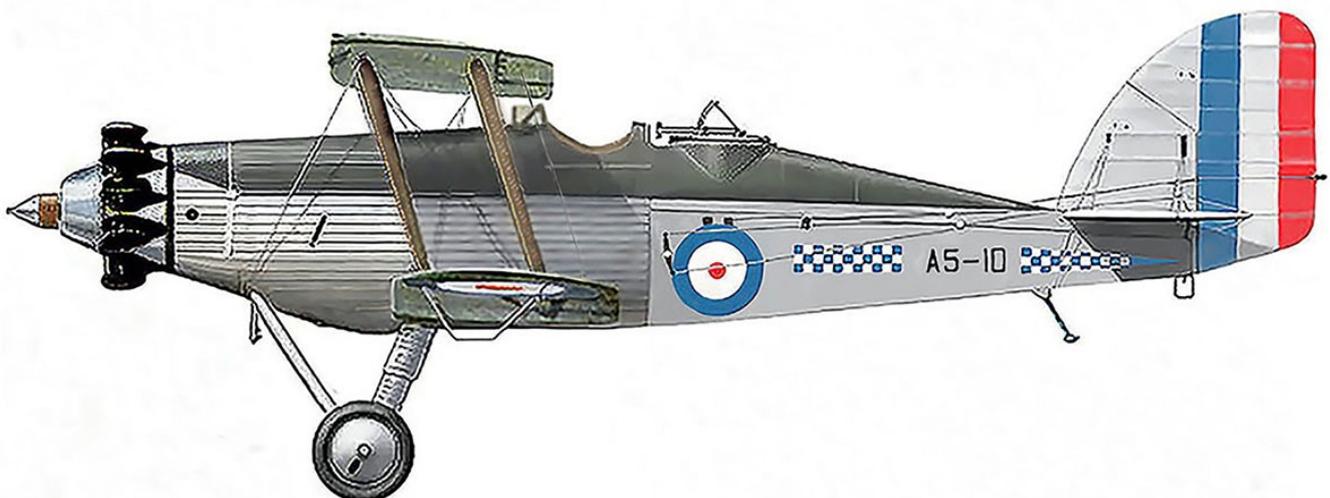
1SQN re-formed from its AFC roots at Point Cook in JUL 1925, moving across to Laverton in JUN 1928, flying the obsolescent *Imperial Gift* types. Receiving army-cooperation Wapitis, 1SQN soon received Australia's first deliveries of Demons in MAY 1935. In JUL 1936 the 1SQN Unit History recorded: "**Wapiti A5-33**, the last of this type held by 1SQN was transferred to 1FTS." By the beginning of 1937, 1SQN had built to a strength of 12 Demons, and was engaged on a diverse range of activities – photographic survey work in Tasmania, Victoria and the northern parts of Australia, and numerous round-Australia survey flights. Additionally, bushfire and flood patrols were regularly carried out, with crop dusting and searches for lost aviators, stockmen and prospectors, and training for core aerial warfare skills were all undertaken. When war with Germany broke out in SEP 1939, the Demons were passed on to CAF units and training schools, leaving 1SQN equipped with Ansons.<sup>75</sup>



[Colourised from RAAF image]

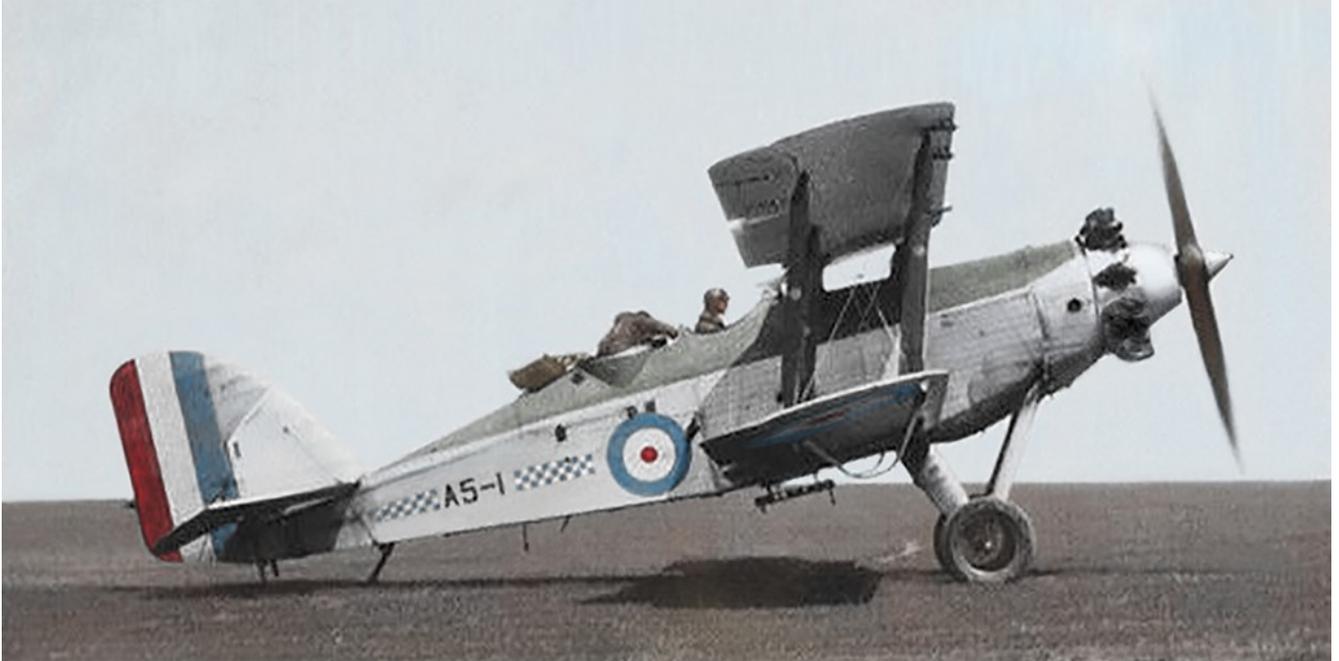
**1929 1SQN Wapitis A5-1 (above) and A5-10 (below)**

Existing images of **A5-1 and A5-10** – both which participated in the RAAF support of the 1929 Sydney/Perth Centenary Air Race – show the original straight axle undercarriage, with A5-1 clearly shows the engine configuration without the later aluminium panelling further aft to the pilot's cockpit, prior to the Mk.IIA upgrade from 1930. Scheme details at AHCB #66, p.6.



## A5-1 – OUR FIRST WAPITI, IN AUSTRALIA 1929

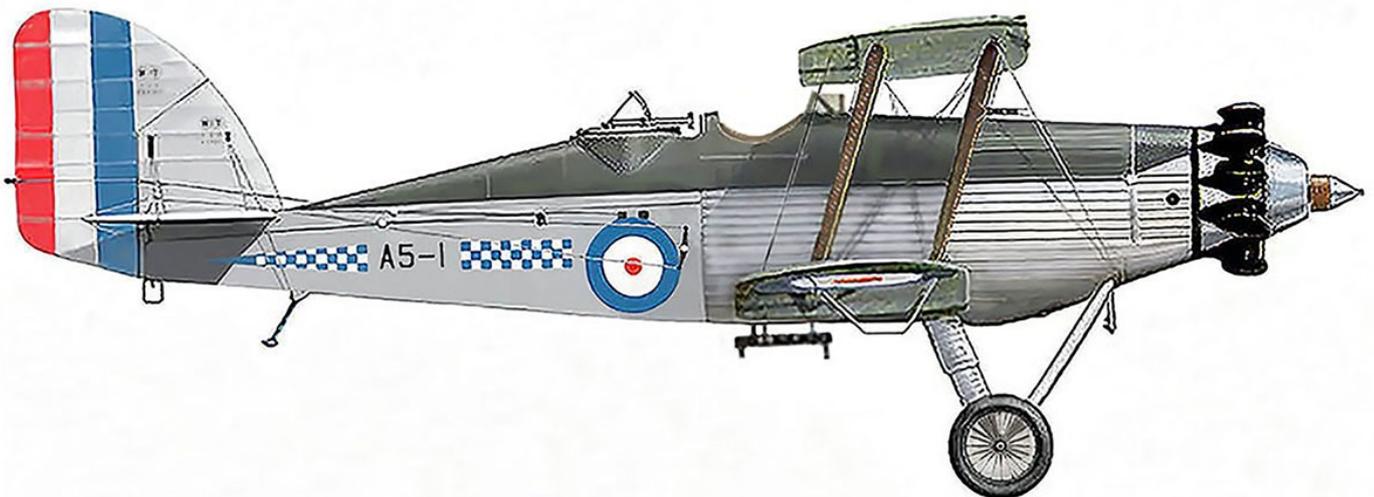
**A5-1** arrived in Port Melbourne on 26 APR 1929 aboard MV *Taranaki*, and sent to 1AD Laverton for assembly and testing, and flew its first flight on 10 MAY 1929. According to the McGuinness source it was not the first Wapiti to fly here, that was A5-2 on 9 MAY 1929 by RAF exchange officer SQNLDR Smart, and A5-1 was flown by the CO WGCDR Anderson on 10 MAY 1929.<sup>76</sup> However, the 1AD Unit History records that the CO flew the first Wapiti flight on 10 MAY 1929.<sup>77</sup> **A5-1** then joined 1SQN at Laverton, and was flown by CAS Air Commodore Williams to Adelaide on 31 MAY for the opening of Parafield Airport.



[Colourised from RAAF image]

### A5-1 at Ceduna, OCT 1929

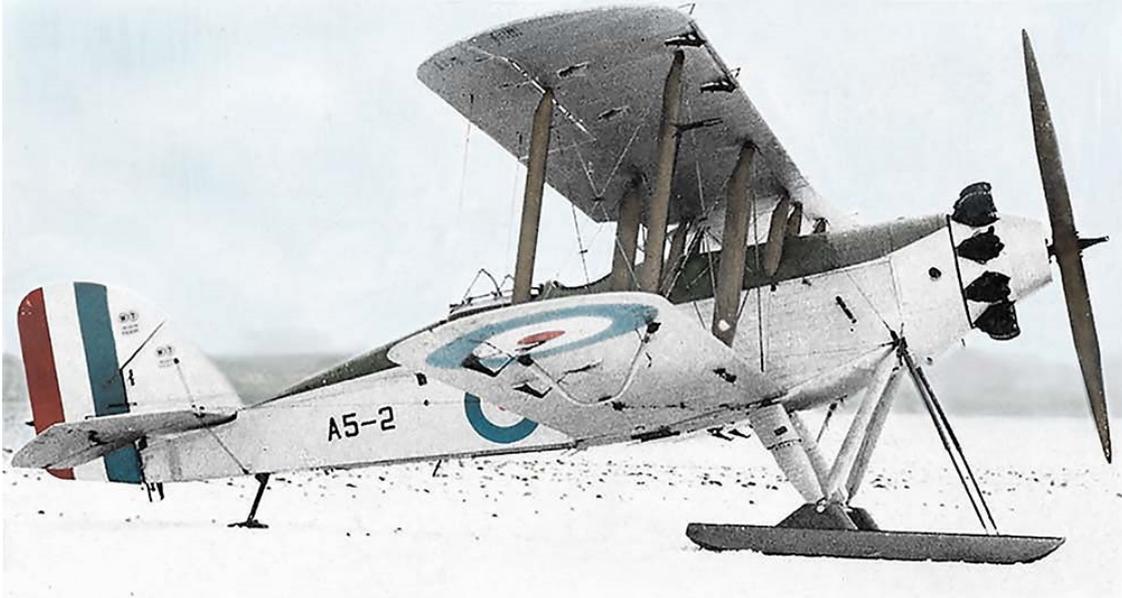
From SEP to OCT 1929, nine RAAF Wapitis participated in the Sydney-Perth Centenary Celebrations Air Race – seven 1SQN aircraft (**A5-1**, **A5-4**, **A5-9**, **A5-10**, **A5-11**, **A5-15** and **A5-18**) flew up from Laverton and were joined by a pair from 3SQN (**A5-2** and **A5-5**) at Richmond. All aircraft departed on 28 SEP 1929, along the route: Sydney-Junee-Laverton-Nhill-Parafield-Kimba-Ceduna-Cook-Forrest-Rawlinna-Kalgoorlie-Tammin, to arrive at Maylands (Perth) on Friday 5 OCT 1929.<sup>78</sup> While in the west, the Wapitis participated in the WA Centenary Air Pageant. The 1SQN aircraft returned to Laverton on 20 OCT 1929.<sup>79</sup> It is possible that *all* the listed 1SQN aircraft carried this squadron marking – however, the only existing images with this marking are of **A5-1**, **A5-10** and **A5-15**.



The 1SQN checkerboard marking was added in time for the epic Perth cross-country in SEP/OCT 1929. This marking was in the roundel *Blue* colour, but appears to have disappeared from aircraft during 1930. Most aircraft had spoked wheels at this stage, which were not retained, as perhaps damage done to these landing at rough remote airfields meant something more rugged were required in the form of wheel covers. Rack on the centre section, where a spare wheel could be carried. Eventually, training Wapitis at 1FTS would have larger wheels with more balloon style tyres.

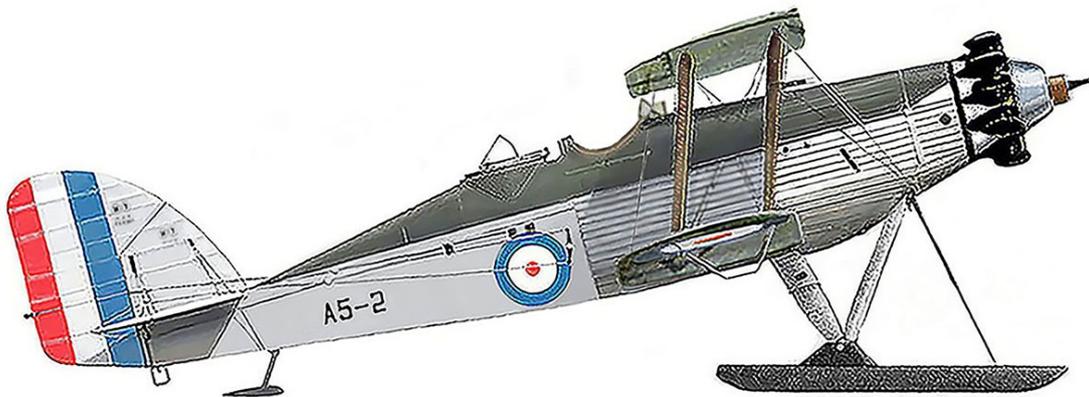
## A5-2 – WAPITI ON SKIS IN UK 1929

**A5-2** – while still at Westland Aircraft Works at Yeovil – was the subject of a publicity shoot showing a ski capability, which was not required in the RAAF. In MAR 1929 **A5-2** was disassembled and packed in three crates and loaded aboard MV *Taranaki* with the other first five RAAF Wapitis. Arriving at Port Melbourne on 26 APR 1929, A5-2 was assembled by 1AD at Laverton and flew on 9 MAY by RAF exchange officer SQNLDR H Smart<sup>80</sup> – although the 1AD Unit History A.50 records the maiden Wapiti flight by the CO WGCDR W H Anderson on 10 MAY. This marked the beginning the re-equipment program for 1SQN, 3SQN and 1FTS with these new aircraft.



*[Colourised from Profile 32, p.6]*

**A5-2** never served as a ski-plane, of course. In MAY 1929 it was one of the first Wapitis for 3SQN at Richmond, and over SEP-OCT 1929 was part of the RAAF team with 1SQN supporting the Sydney-Perth Centenary Air Race.



From FEB 1930, **A5-2** served with 1FTS at Point Cook, until **crashing on 4 JUL 1934** – suffering an engine failure and forced landing in a forest near Mt Macedon VIC, this resulting in extensive damage, injuring the crew. After return by tender to 1AD for survey, on 20 JUL 1934 it was approved for write-off and conversion to components.



*[Colourised RAAF image]*

## A5-14 – 3 SQUADRON 1929-1930

**A5-14** arrived in Port Melbourne on 21 JUN 1929 aboard SS *Mahana*, and received at 1AD Laverton for assembly and testing on 24 JUN.<sup>81</sup> On 7 NOV 1929, A5-14 was received by 3SQN at Richmond, participating the following APR in the 1930 Narromine Air Pageant, which is perhaps where the below image was taken.



[colourised from RAAF image]

**A5-14 c1930 showing the 3SQN fin marking, possibly at Narromine NSW**

**A5-14** participated in the normal Wapiti activities during its service life – between Squadron army-cooperation training, took part in the massed formation and air pageant activities around the country. In OCT 1934 **A5-14** participated in the 23-strong Wapiti formation as part of the 45-aircraft Royal Salute for the arrival of HRH the Duke of Gloucester aboard the RN cruise HMS *Sussex* as she sailed up Port Phillip Bay. In NOV 1934 **A5-14** participated at the Laverton Air Pageant, and at the Cootamundra Air Pageant, then helped form part of the 18-strong Wapiti formation as a Royal Salute for HRH's arrival in Sydney Harbour on 22 NOV 1934.



[Original RAAF colourised image]

**Wapiti A5-14, 3SQN marking on the fin, probably at the time of its forced-landing near Buladelah NSW in NOV 1930**

Before leaving 3SQN, A5-14 was one of nine 3SQN Wapitis taking part in the 1934 Festival of Sydney Aerial Display at Richmond on 26 NOV 1934. Transferred to 1 FTS Point Cook in JUL 1935, A5-14 served as an advanced trainer until JAN 1940 when it was passed to 1 Engineering School (1ES) at Ascot Vale, Melbourne Showgrounds, to become Wapiti **Instructional Airframe No.9** (A/I.9).

## PREWAR 3 SQUADRON – 1929-1930

**3SQN** had formed on 1 JUL 1925 at Point Cook, but moved soon after to Richmond NSW. 3SQN consisted of three flights: an Army Co-Operation (equipped with D.H.9s), one with S.E.5a fighters, and a bomber flight with D.H.9As. During 1929, the unit was re-equipped with the Wapiti. On 16 MAY 1929 the first Wapiti was allotted to 3SQN and ferried from Laverton to Richmond by the CO; three more were allotted during MAY 1929.<sup>82</sup> Wapiti IAs in 3SQN service over 1929-1930 included **A5-2, A5-3, A5-5, A5-6, A5-12 and A5-14**. In MAY 1935, 3SQN received its first Hawker Demon, and by JUL 1935 both 'A' and 'B' FLTS had re-equipped with the Demon, with 'C' FLT retaining the old workhorses as some Demons were required also by 22SQN. The Wapiti maintained its remote tasking in 3SQN until SEP 1936, for the survey of the Pilbara region.<sup>83</sup> With the arrival of the Demon, the Wapiti was relegated to a training role although in reality the Demon was not that much of an improvement in type.

By the outbreak of hostilities in SEP 1939, 3SQN had 12 Demons and the Australian Government decided that for national and training reasons the 6th Australian Division, 2nd AIF, should have an army co-operation squadron. In JUL 1940, 21 3SQN officers and 271 airmen sailed from Sydney, and on 23 AUG arrived at Suez, Egypt.<sup>84</sup>



[Colourised from RAAF image]

### D.H.60 A7-18 following an incident at Richmond c1929-1930, and with the 3SQN fin marking

The reason for the darker colour along the upper fuselage decking is not known, and it is assumed to be *Red*. The 3SQN fin marking is of interest, one of a very few RAAF squadron marking in the late 1920s, and it is assumed to be *Black*. Also marked on the fin of Wapiti A5-14, which did not join 3SQN until NOV 1929. Therefore: this marking was applied after its move from 1FTS (where it carried the older style/period serial in AUG 1929), and at a similar time as Wapiti A5-14 (from NOV 1929) – so this is assessed as late 1929 into 1930.



[Colourised from AHCB 66, p.5]

### 1929-1930 Wapiti Mk.IA A5-2 3SQN

**A5-2**, already marked with the 3SQN metal winged badge on either side of the nose, with *Black* wheel hubs, and the '3-in-a-circle' unit fin marking. This was a **16-inch diameter circle surrounding a 8-inch high '3'**, also confirmed as marked on **A5-14**. Like the 1SQN checkerboard, this marking did not last – as it was apparently unofficial – and disappeared during 1930.

## PREWAR 3 SQUADRON – 1929-1936

The 3SQN metal badge had been designed in JUN 1929 by an RAF exchange office on the unit, FLTLT C T Anderson DFC.<sup>85</sup> It was a winged bomb, which later became the official 3SQN crest/badge which also kept the Latin 'Operta Aperta' ('Secrets Revealed') motto, and received official Chester Herald approval in MAY 1940.<sup>86</sup>



[Colourised from RAAF image]

The 3SQN metal badge on the Wapiti, and below on the Demon



[Cluley, p.156]



[Cluley, p.157]

The 3SQN metal badge originally applied to the Wapiti in 1929, later added to the Demon (left) from 1935

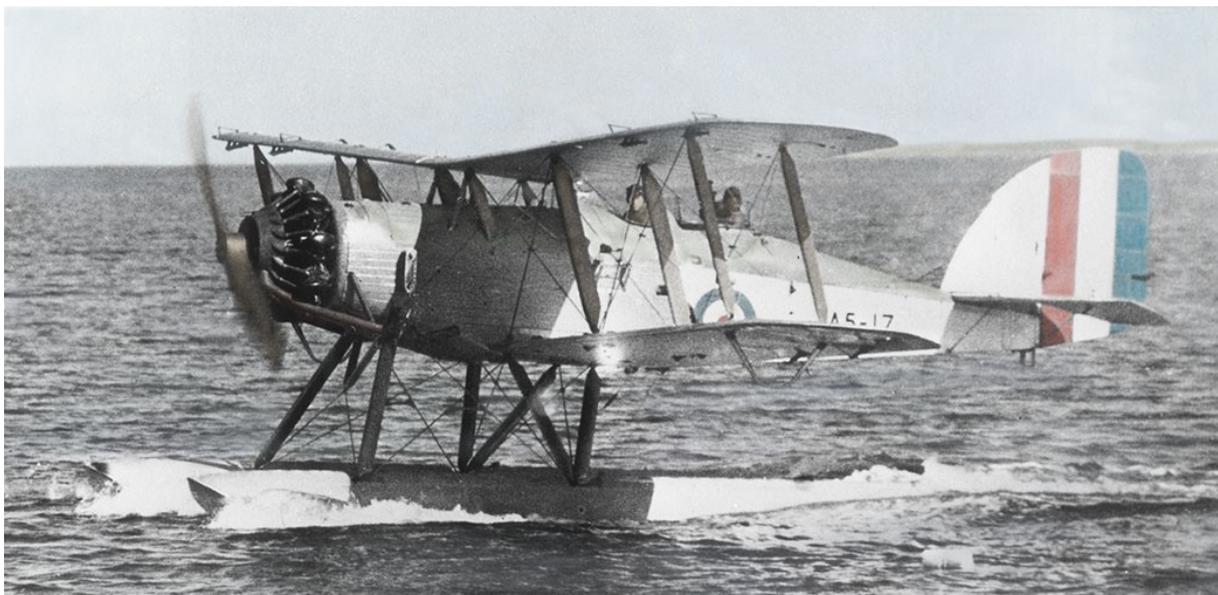


[adf-serials images]

The 3SQN badge, and how it appeared on Mirages and the Hornet

## WAPITIS ON FLOATS – A5-17 1933-1935

**A5-17** was received by 1AD at Laverton in JUL 1929, serving with 1FTS Point Cook from SEP and then to 1SQN from MAY 1930. It went to 1AD for major servicing in JUL 1931 – which might well have been its upgrade to Mk.IIA – and returned to 1SQN in SEP 1931, participating in the 1SQN Annual Trans Australia training flight in 1933.<sup>87</sup>



[Colourised from RAAF image]

### 1933-1935 A5-17 with 1FTS Seaplane Squadron

Over 1928/1929, the RAF had conducted Wapiti seaplane trials fitted with Shorts floats at the Marine Experimental Establishment, Felixstowe – first with Mk.IA J9048, then with Mk.IIA J9498. Handling with floats was described as “outstanding”.<sup>88</sup> Two years later, the Mk.V G-AAWA was fitted with floats during the 1931 British Exhibition in Buenos Aires, demonstration to personnel from Argentina and Uruguay, although no orders from this tour resulted.<sup>89</sup> The RAAF had acquired floats for the Wapiti and in 1933 1FTS Seaplane Squadron fitted these to A5-17, which served in this configuration over from NOV 1933 to OCT 1935.



[Colourised from RAAF image]

### 1936 A5-17 returned to a landplane at 1FTS

In OCT 1935 **A5-17** was received by 1AD for overhaul and was reconverted to landplane configuration. In APR 1936 it was received back at 1FTS, and in APR 1938 flew with eleven other 1FTS Wapitis for the 1938 RAAF Aerial Pageant at Melbourne’s Flemington Racecourse.<sup>90</sup> Continuing training duties with 1FTS until the outbreak of War, in JAN 1940 **A5-17** was issued to 1ES at Ascot Vale, becoming **Instructional Wapiti No.7 (I/A.7)** in JUN 1940. **The date of this image of 1936 is significant** – it is prior to the changing to the darker *Blue* in the national markings and the application of training numbers in 1937, and now has been relegated to pilot training so the rear cockpit Scarff ring is no longer required but retains the pilot’s Vickers gun. Experience gained with operating A5-17 as a seaplane over 1933-1935 enabled the quick conversion of A5-37 to embark on the **Lincoln Ellsworth Relief Expedition 1935-36**.

## WAPITI ON FLOATS – A5-37 1935-1936

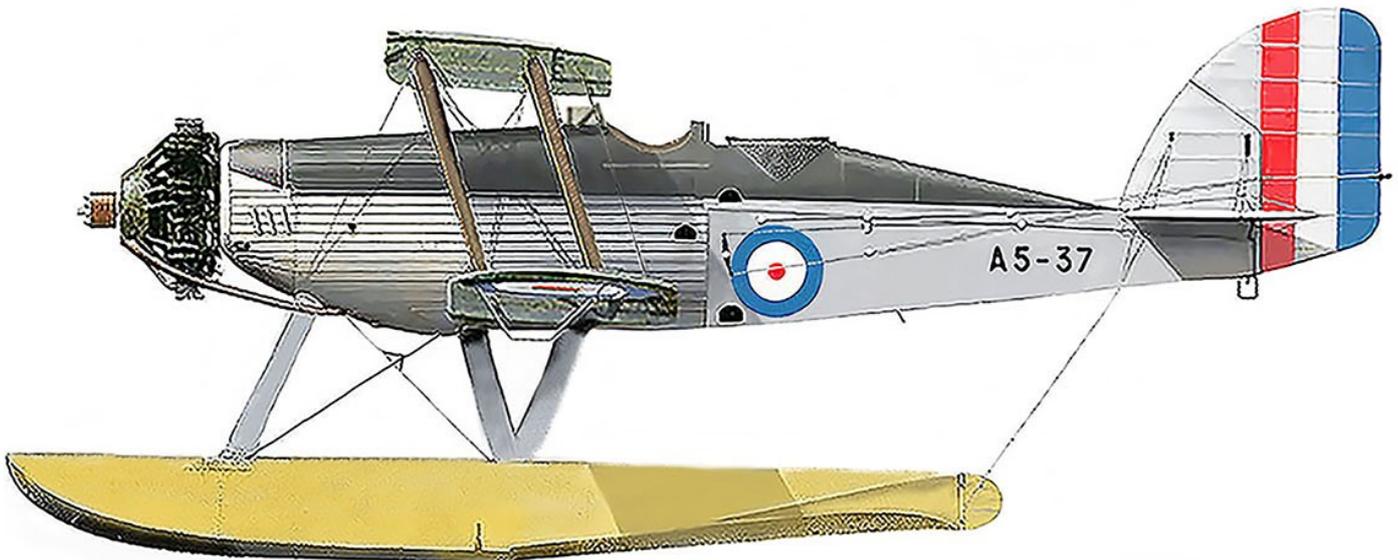
On 4 DEC 1935, an urgent demand by RAAFHQ tasked 1SQN to provide a Wapiti with long-range fuel tanks for depatch on an Antarctic search mission. Wapiti **A5-37**, then on a 1SQN detached camp at Cootamundra, was sent to 1FTS at Point Cook for overhaul and fitment with floats that, since use by Seaplane Squadron on A5-17, were in storage at 1AD.<sup>91</sup> **A5-37** was shipped from Melbourne with D.H.60G Moth A7-55 to Antarctica aboard RSS *Discovery II* to conduct a search for famous US adventurer Lincoln Ellsworth, whose Northrop Gamma monoplane had been forced down during a flight across the ice. The RAAF rescue aircraft were loaded at Williamstown on 23 DEC, as illustrated in the new 2021 book, *Aircraft of the Royal Australian Air Force*.



[Colourised from RAAF images]

### DEC 1935 A5-37 Lincoln Ellsworth Relief Expedition loading at Williamstown

**A5-37** was fitted with the stored Seaplane Squadron Wapiti floats, that had been made by Shorts Bros of Rochester, Kent, and used for training on A5-17. Because of the haste to depart, both the repainting of the accompanying Moth A7-55 (which was painted all-over *Yellow*)<sup>92</sup> and the Wapiti's floats took place enroute. The floats had been *Grey Green* cellulose enamel (same as the fuselage decking), and on the journey south they were painted *Yellow*.<sup>93</sup>



The Wapiti was not flown during this relief expedition, as on the third flight in the Moth, on 15 JAN 1936, the RAAF crew located the US base camp 'Little America'. The Moth dropped a bag of food and cigarettes with a letter from *Discovery's* captain. When a ground party from *Discovery* reached the camp, Ellsworth remarked it was decent of them to look him up – Ellsworth was always insistent that he was in no need of rescue, denying that he had been retrieved, or aided, and the terminology settled upon was for him being 'located'.<sup>94</sup> Ellsworth subsequently sailed aboard the *Discovery's* return passage, and only two more Moth flights were undertaken for ice reconnaissance on 28 JAN. *Discovery* berthed in Melbourne on 16 FEB, and Ellsworth received an official reception.

## NATIONAL MARKING DESIGNATIONS – 1937-1942

### Prewar, from 1937

**Roundels.** In the RAF in 1936, the traditional *Bright Blue* and *Bright Red* shades were darkened and the RAAF followed from about 1937. Then with camouflage, the colours were dulled and a *Yellow* outer ring was added to the *red/white/blue* roundels, with an apparent dichotomy of these changes:<sup>95</sup>

- the first measure of introducing the ‘dull’ shades was taken to try to avoid compromising the camouflage finish,
- and perversely, the latter of applying a *Yellow* outer ring, was made to make camouflaged aircraft more visible!

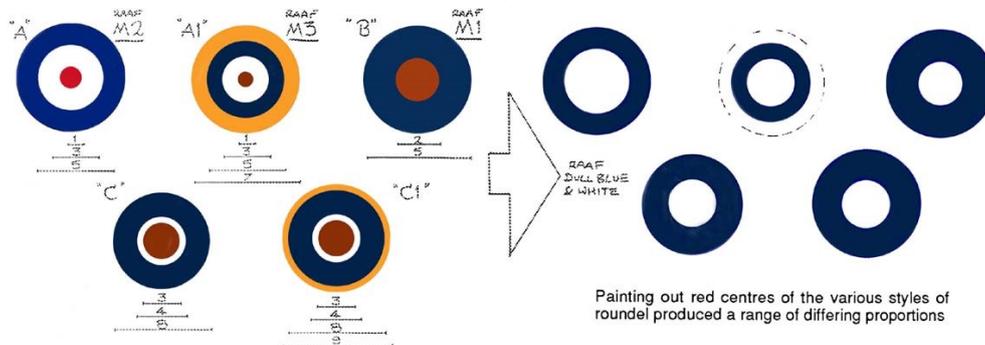
The *Yellow* outer ring, equal in width to the other rings, did not apply to the Wapiti. But at the time of the SEP 1938 Munich Crisis, the roundels for camouflaged aircraft were converted to a *Blue/Red* roundel, the *Red* centre being two-fifths of the overall diameter (a 2:5 ratio) – formalised by the RAF on **27 APR 1939** as **AMO A.154/39, Identification Markings on Aircraft of Operational Units**. This marking was RAF **National Marking (i)** and located on both sides of the fuselage and on upper mainplanes. Postwar it became better known as the **type-B** roundel, with designators that we now know as ‘A’, ‘B’, ‘C’, etc, developed in the 1950s purely for simplicity (attributed to author Bruce Robertson from his early benchmark *Harleyford Aircraft Camouflage and Markings 1907-1954*). **National Marking (ii)** comprising *red/white/blue* (**type-A**) was to be marked on wing lower surfaces.<sup>96</sup> When these markings were implemented into the RAAF over 1939/1940, the RAF National Marking (i) became RAAF National Marking ‘M.1’, and RAF (ii) became RAAF ‘M.2’. The *Yellow*-surrounded roundel became the RAAF ‘M.3’ (again, not applicable to the Wapiti).

	RAF Roundel 1938	RAAF Roundel 1939/40	Postwar simplified terminology
	National Marking (i)	<b>M.1</b>	<b>Type-B</b> <i>Brief use on the Wapiti</i>
	National Marking (ii)	<b>M.2</b>	<b>Type-A</b> <i>Main roundel for the Wapiti</i>
	National Marking (iii)	<b>M.3</b>	<b>Type-A1</b> <i>Not used on the Wapiti</i>

**Rudder Striping.** The colours of the WWI *rudder striping* were reversed by the RAAF in JAN 1931, following the RAF, so that *Red* was leading. But generally rudder striping was discontinued in Britain in 1934 as improved aircraft performance demanded smoother control surfaces free of paint to avoid balancing problems on surfaces and hinges<sup>97</sup> – as can be seen on the earlier 1935 RAAF delivery images, the Demon, Cadet, and Anson carried no tail National Markings. However, the Wapiti did retain its rudder striping, which was discontinued by late 1942 as *Red* had been removed from National Markings; any ‘rudder striping’ became the ‘fin flash’, as apparently marked on Wapiti A5-16.

### Changes to RAAF National Markings from 1939

The RAAF “M1” roundel was what we refer to now as the RAF ‘B’ *red-blue* roundel, and was adopted by the RAAF briefly over late 1939 into early 1940 with the declaration of war with Germany. On 12 SEP 1939, Directorate of Technical Services in RAAFHQ advised that for top surfaces and fuselage the roundel would be *Red/Blue* (i.e. what would become the “Marking M.1”), and roundels on undersides would be *Red/White/Blue* (“M.2”).<sup>98</sup> While this was formalised by the policy **Aircraft General Instruction (AGI) No.C.11 of 22 SEP 1939**, these ‘M-series designators’ were not applied until the **AGI C.11 of OCT 1940**. From SEP 1942, of course, *Red* was eliminated from RAAF markings.<sup>99</sup>



#### Coloured from Ian Baker's *AHCB #5, Roundels, Tail Stripes & Other Markings*

RAAF “M.1” (RAF type-B) was 2:5 ratio, and the “M.2” (the standard red-white-blue type-A) was 1:3:5, and in MAY 1940, the RAAF fuselage roundel was reverted from the M.1 back to the M.2.<sup>100</sup> With *Red* eliminated in SEP 1942, the M.2 became 3:5 ratioed. With RAF arrivals over 1942/43 with type-C/C1 roundels, by overpainting of the *Red* by *White*, these became a 1:2 ratio roundel.

## WAPITI TRAINING NUMBERS

The RAAF put on its most spectacular aerial pageant at Flemington Racecourse, Melbourne, in APR 1938. This featured 85 aircraft, watched by an estimated crowd of 50,000 from inside the venue and 120,000 from outside.<sup>101</sup>



[Colourised from State Lib VIC image H99.206/1637]

**9 APR 1938** 1FTS Wapiti massed formation of A5-34, A5-14, A5-23, A5-5, A5-37, A5-16, A5-9, A5-32, A5-33 and A5-27

This mass formation was for the 1938 RAAF Aerial Pageant held at Flemington Racecourse. Here are ten of the 12 Wapitis that participated. For the Sydney audience, the display was repeated as the 1938 RAAF Richmond Aerial Pageant on 23 APR.<sup>102</sup>

As related in this series regarding the Cadet, D.H.60 Moth and Demon in training service with 1FTS at Point Cook, large 'training numbers' were marked forward of the roundel, or on the nose, to identify recalcitrant trainees (or instructors!). These training numbers normal comprised the 'last two' of the aircraft serial number. With the Wapiti, the training number was positioned aft of the fuselage roundel, and applied in *Black 20" x 12½"* characters – whenever possible, training numbers or code numbers on all RAAF aircraft were applied in the same proportions as the 8" x 5" serial number, and in the same font style. Mainly only the large Wapiti training number (the 'last two' of the serial) was carried on the port side (as seen above), the starboard incorporating this large number in the serial.



[Colourised from RAAF image]

**At Point Cook, A5-35 – with another – showing the non-standardised application of starboard training numbers, c1936-39**

After delivery in 1931, A5-35 served on 1FTS from JUL 1936, and this image is prior to the SEP 1939 AGI C.11 mandating use of the unit code "Y" for 1FTS. **A5-35** was written-off in an unusual crash on 6 DEC 1939: flown by a cadet in a student 3-ship formation, **A5-35** was last seen in a gentle turnaway and not sighted again until fatally crashing beside the railway line west of Laverton.<sup>103</sup>

## A5-40 TRAINING NUMBERS

**A5-40** was delivered as an ex-RAF attrition replacement (possibly ex-K2262) in FEB 1938. Erected by 1AD Laverton in MAY 1938, from AUG 1938 **A5-40** served with 1FTS. Being in the last batch of Wapitis delivered, it would have been received in Australia with the darker RAF *Dull Blue* roundels. Between the undercarriage legs was the bulged spare-wheel stowage.<sup>104</sup> Another of these ex-RAF Wapiti batch was **A5-42**, which was still operational with SHQ Richmond in SEP 1943 when it taxied into a Vultee Vengeance on the tarmac.<sup>105</sup> In JUN 1944, A5-42 was received by No.2 Central Recovery Depot (2CRD, an adjunct to 2AD) at Richmond and converted to components.<sup>106</sup>



[Colourised from *adf-serials*]

### Wapiti IIA A5-40 '40' of 1FTS 1938-39

1FTS **A5-40** with '40' training number on the port side, was probably marked **A5-40** on the starboard. By this stage, the 1FTS Wapitis had the larger balloon tyres and the larger tailskid. In JAN 1940, **A5-40** was allotted to the Training Depot at Point Cook (prior to 1ES at Ascot Vale being formed) for instructional purposes, then later in JUN 1940 becoming **Instructional Wapiti No.8**.



The large training numbers were consistent with the format of the serial characters and maintained the same proportions, so the 8" x 5" serial characters in 1" stroke became training numbers 20" x 12½" in 2½" stroke.

1 2 3 4 5 6 7 8 9 0

## WARTIME COLOURS – A5-12

**1FTS**, the RAAF's flying training unit at Point Cook, was equipped with D.H.60 Moths, Cadets, Wapitis and Demons immediately pre-war. **1SFTS** formed at Point Cook from 1FTS on 1 MAY 1940, as part of the major re-structuring of flying training to introduce EATS, and was initially to be involved in the training of some 150 pilots at a time, using an advanced flying syllabus (post-EFTS), initially with a strength of 52 aircraft which included 12 Wapitis.<sup>107</sup> A typical training accident was **A5-12** on 2 JUL 1930 with 3SQN Richmond, when FLTLT (later ACM Sir) Fred Scherger was checking FLGOFF J Fleming, and had finished the testing and took over to land near the tarmac: "The machine landed perfectly, ran about fifty yards in a straight line, and when it had come almost to a standstill, the tail went up and the machine turned over." <sup>108</sup>



[Colourised from RAAF image 000-148-295]

**A5-12 target tower with the drogue cable streaming below the fuselage, c1938-39** <sup>109</sup>



[Colourised RAAF image]

### **A5-12 '12' 1FTS 1939-1940**

The short-lived M.1 (type-B) roundel on fuselage and upper surfaces – which reverted to the M.2 (type-A) roundels from MAY 1940. Also from the pre-war years, **training numbers** could just be two digits, here '12' on the port side with variations on the starboard, and unit code 'Y' signifying 1FTS from the SEP 1939 AGI C.11. (Scheme details from AHCB #67, p.13.)



**Final training configuration** – no guns, blind flying hood, Gosport tube intercom, nav lights, larger tyres and hubs, large tail skid.

## OUR LAST FLYING WAPITI – A5-16 1944-1945

**A5-16**, the last Wapiti flying at 1SFTS at Point Cook until SEP 1942, was allotted to 2AD Richmond and then to 1AD Laverton in NOV 1942 specifically for towing the DHA Glider A57-1002, which continued with 1APU in DEC 1943.



[Colourised adf-serials image]

**1938** A5-16 at 1FTS Point Cook, with just the training number '16' displayed on the port side



In JAN 1944 **A5-16** was allotted to **3AD at Amberley**, being received from 1AD on **1 MAY 1944** according to the 3AD A.50, although the E/E.88 catches up giving the receipt date as 16 MAY! There is no further record of **A5-16** on 3AD strength or used for any flying activity;<sup>110</sup> the E/E.88 provides serviceability data through to MAR 1945 when approval was given for conversion to components. These serviceability reports typically report A5-16's **unserviceability** – “E-Star” (U/S > 3 days), “F” (U/S > 14 days), or “G” (U/S > one month).<sup>111</sup> So it probably had ceased flying during 1944, or perhaps used occasionally on serviceable days into 1945 as a ‘hack’, but does not feature again on Amberley records until being ‘converted’ (i.e. to components) by 3CRD – 3 Central Recovery Depot, a ‘lodger unit’ with 3AD at Amberley – together with its engine (Jupiter J8815) during JAN 1946.<sup>112</sup> **A5-16** was allotted to 3CRD in **MAR 1945**, it had probably long ceased flying – the E/E.88 records “issued to 3CRD ex 3AD” on 3 JAN 1946.



[Colourised RAAF image]

**1944** A5-16 with Pacific roundels, probably with 3AD Amberley in 1944-45

This final scheme for **A5-16** appears to be an overall grey, or *Aluminium* with blotches of grey – it cannot be determined the exact colour. However, the 1:2 Pacific roundels appear to be 30” diameter on both the fuselage *and* underwings. It is probable that fin flashes may have marked. Carriage racks under each wing (probably for towing), with the large tyres and tailskid.

## WAPITI INSTRUCTIONAL AIRFRAMES

The RAAF E/E.88s record a total of eleven Wapitis converted to Instructional Airframes (I/As) over 1939-1940, but apparently others were used as training aids, not receiving an I/A number. These were allotted from early 1940, when Engineering School was at Point Cook (as part of the Training Depot), then some were moved with the Eng School to Melbourne Showgrounds/Ascot Vale (as 1ES) in about MAR 1940. All appear scrapped by 1944.



*[Colourised RAAF image]*

**1940 Wapiti A5-3 at Eng School early 1940, with Avro Avian VH-UKD as Instructional Avian No.1 and Moth Minor A21-6**  
 This image of A5-3 at 1ES suggests it was in use as an I/A (but no record of it ever receiving an I/A number), its training number has been removed, and with an M.2 roundel (the timing suggests that an M.1 was never applied). Air Board Agenda (ABA) 2577/39 of **16 SEP 1939** is the first reference to instructional use of Wapitis. A5-9 had been suggested for use at Laverton, for the practical instruction of Riggers, while the fuselage of A5-3 could be suitable for W/T instructional purposes at the Wireless School, Point Cook. In the event, on 20 SEP 1939, A5-9 was recommended as an instructional airframe (I/A.10), while A5-3 was recommended for conversion to components (CTC) or scrap.<sup>113</sup> As this was only a few weeks after the start of the War which had triggered the RAAF's huge effort of the training of technical personnel, there was still some uncertainty of instructional requirements for ground personnel, and **A5-3** was approved for CTC on 6 MAY 1940.

The dates of conversion to Instructional Wapitis shown on E/E.88s do not provide a neat chronological allocation of I/A numbers. It appears eight block allocations were made on 18 JUN 1940 and on 28 OCT 1940, with other dates recorded in no discernible pattern. In the case of **A5-3** it was converted to components, probably soon after the image shown above. Covered by the same 1939 ABA was A5-9, which received an out-of-sequence Instructional Wapiti number of I/A.10. A few details of the fates of RAAF Wapitis are provided in the NAA A11487 series of Air Board Agenda (ABA) covering some Wapiti disposals, namely for A5-17 and A5-3/A5-9.

Wapiti I/A No	Serial	E/E.88 Date	Details
<b>I/A No.1</b>	A5-17	18 JUN 1940	15 APR 1940 for I/A at ES, authorised to I/A.1 18 JUN 1940, scrapped
<b>I/A No.2</b>	A5-1	28 OCT 1940	Issued 24 MAY 1940 1ES, authorised to I/A.2 28 OCT 40, scrapped 5 DEC 1944
<b>I/A No.3</b>	A5-5	28 OCT 1940	CR 1 MAY 1940, Eng School 28 MAY 40, auth to I/A.3 28 OCT 1940, scrapped
<b>I/A No.4</b>	A5-11	3 SEP 1940	Dam 18 MAR 1940, to Eng School 24 MAY 1940, auth I/A.4 3 SEP 1940 but CTC
<b>I/A No.5</b>	A5-43	28 OCT 1940	Dam 19 MAR 1940, to Eng School 5 JUN 1940, auth I/A.5 28 OCT 1940, scrapped
<b>I/A No.6</b>	A5-41	28 OCT 1940	Issued Eng School 2 JUN 1940, auth I/A.6 28 OCT 40, CTC mainplane to 1 ITS
<b>I/A No.7</b>	A5-34	18 JUN 1940	Allotted to Training Depot (TD) 16 JAN 1940, auth I/A.7 18 JUN 1940, scrapped
<b>I/A No.8</b>	A5-40	18 JUN 1940	Dam 22 AUG 1939, allotted to TD 16 JAN 1940, auth I/A.8 18 JUN 1940, CTC
<b>I/A No.9</b>	A5-14	18 JUN 1940	Allotted to TD 16 JAN 1940, auth I/A.9 18 JUN 1940, at Eng School, scrapped
<b>I/A No.10</b>	A5-9	20 SEP 1939	ABA 2577/39 considered SEP 1939 for instructional use, approved 20 SEP 1939, issued TD 24 FEB 1940, to Eng School 18 APR 1940, later auth as I/A.10, scrapped
<b>I/A No.11</b>	A5-32	14 MAY 1940	To Eng School 25 JUL 1940, to I/A.11 14 MAY 1940, authorised CTC 9 SEP 1940

**Notes:**

**A5-3** image shows at 1ES, but ABA 2577/39 records it as recommended for CTC or scrap in SEP 1939, and CTC MAY 1940; **A5-26** allotted to TD/Eng School in JAN 1940, but held at 1FTS/PCK and CTC JUN 1940; **A5-4** reportedly became an I/A but no record. Ground training was originally the responsibility of the Training Depot (TD) at Point Cook (PCK), of which Eng School was part. Eng School to Ascot Vale as 1ES on 1 MAR 1940,<sup>114</sup> although E/E.88s show mid-1940 units as 'Eng School', these should be '1ES'.

## WAPITI SURVIVORS



[image Andrew Shaw via Flickr]

**Wapiti 'K813'** survives at the [Indian Air Force Museum, Palam](#), Delhi. Although in poor condition with many mocked-up parts, it is the last surviving airframe resembling a Wapiti. There is no engine – just a vague look-alike – the undercarriage has vehicle wheels, and the serial is totally incorrect. Many Jupiter VIII engines are available with the SAAF Museum, and enough data is available to credibly restore this only remaining Wapiti. “The IAF’s founding warplane sits in the Museum today crying out for the respect and grandeur that it deserves”.<sup>115</sup> The fuselage and lower wing are reportedly from another Wapiti in worse wear in the Museum’s storage facility. The IAF roundel on the underside of the upper mainplane provides a nice touch!



[image JetPhotos]

**Westland Wallace Mk.II K6035.** An incomplete Wallace, just the fuselage, is displayed at the RAF Museum Hendon. K6035 flew until NOV 1940, becoming RAF Instructional No. 2361M and presumably used for training at Cranwell. Two other Wallaces were retired at the same time: K6038 (2365M) and K6051. It seems that these three aircraft were used for a time for ground instructional at Cranwell and then pushed out to the edge of a wooded area at Cranwell North airfield and left to rot. Eventually removed to a scrapyards, the three fuselages were ‘rediscovered’ in 1963, and the remains acquired by the RAFM in 1977. Examination of the remains led to the decision to have an example restored by the SkySport company beginning in 1987, with the tail empennage restored first, followed by the fuselage. It was generally believed that the fuselage being worked on was that of **K6035**, with parts from the other two fuselages being used as required. ‘K6035’ was taken as the identity of the display airframe since it had the most complete history, being the only one with squadron service. SkySport undertook a very thorough restoration of the fuselage, retaining as much original structure as possible, with the result that the aircraft as displayed is some 80% original. Original parts include fin/rudder, observers’ cockpit structure, forward fuselage, centre-section struts and spar carry-throughs, cowling and undercarriage. The tyres are from Rolls-Royce cars and the Pegasus engine from RAFM stock, as is the 1933 wooden propeller. Official hand-over was 1993 at the RAFM.<sup>116</sup>



## Westland Wapiti

The Wapiti's reliable and hardy nature, if not particularly spectacular, was well suited to Australian conditions. Many RAAF members regarded the Wapiti as a quite remarkable aeroplane. Renowned RAAF fighter pilot Dick Cresswell recalled: "I remember the No.1 stoppage drill on the machine-gun involved leaning out of the cockpit and walloping it with a long-handled hammer."

– *The Third Brother, official RAAF history 1921-1939* <sup>117</sup>

## Sources:

- I K Baker, *Aviation History Colouring Book 1, Westland Wapiti*, Melbourne Vic, 1995.  
 I K Baker, *Aviation History Colouring Book 27, Missing Links*, Queenscliff Vic, 1996.  
 I K Baker, *Aviation History Colouring Book 43, Updates & Oddities 2*, Queenscliff Vic, 2001.  
 I K Baker, *Aviation History Colouring Book 66, RAAF Colour Schemes & Markings Part 2*, Queenscliff Vic, 2009.  
 I K Baker, *Aviation History Colouring Book 67, RAAF Colour Schemes & Markings Part 3*, Queenscliff Vic, 2009.  
 D N James, *Westland Aircraft since 1915*, Putnam, London, 1991.  
 C F Andrews, *The Westland Wapiti, Profile No.32*, Profile Pubs, Leatherhead Surrey, 1965.  
 A J Jackson, *De Havilland Aircraft since 1909*, Putnam, London, 1987.  
 J Tanner, *British Aviation Colours of World War Two*, Arms & Armour Press, London, 1986.  
 P Lucas, *Camouflage & Markings No.2*, Scale Aircraft Monographs, Guideline, Luton, Beds, 2000.  
*Aircraft of the Royal Australian Air Force*, Big Sky Publishing, Sydney, 2021.  
 J Bennett, *The Imperial Gift*, Banner Books, Maryborough, 1996.  
 P McGuinness, *A Brief History of the Wapiti in RAAF Service*, <http://aircrewremembered.com/mcguinness-raaf-archive-westland-wapiti.html>  
*Units of the RAAF, A Concise History, Vol.2 Fighter Units*, AGPS, Canberra, 1995.  
*Units of the RAAF, A Concise History, Vol.3 Bomber Units*, AGPS, Canberra, 1995.  
*Units of the RAAF, A Concise History, Vol.8 Training Units*, AGPS, Canberra, 1995.  
 R J Cluley, *Unit Badges of the RAAF*, RAAF Association Victoria, Melbourne, 1989.  
 B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester, 1987.  
 AM Sir Richard Williams, *These Are Facts*, AWM, Canberra, 1977.  
 C D Coulthard-Clark, *The Third Brother*, Allen & Unwin, Sydney, 1991.  
 N Parnell & T Boughton, *Flypast*, AGPS, Canberra, 1988.  
 R J Francillon, *The RAAF & RNZAF in the Pacific*, Aero Pictorials 3, Aero Publishers, Fallbrook CA, 1970.  
 B R Walker, *Black Jack*, Banner Books, Canberra, 1994.  
 B Cookson, *The Historic Civil Aircraft Register of Australia G-AUAA to VH-UZZ*, Austairdata, Brisbane, 1996.

# Notes Regarding No.1 and No.2 Squadron Beauforts

Garry Shepherdson

This is the last instalment of this little series and in it I'll offer some notes in relation to Beaufort aircraft operated by Numbers 1 and 2 Squadron in North Western Area. When discussing both units I've decided to give 2SQN precedence over 1SQN because 2SQN started using Beaufort aircraft operationally before 1SQN.

## **General**

Number 2 Squadron began receiving its first Beauforts immediately before Christmas, 1943 and started using them on operations from January 12<sup>th</sup>, 1944. Beaufort's were used concurrently with Hudson IIIa aircraft, in increasing numbers, until the last Hudson operation on April 8<sup>th</sup>, 1944, from which point they, the Beaufort's, were used exclusively on operations until May 22<sup>nd</sup>, when the last Beaufort op was flown. The Squadron then concentrated on conversion to B-25 Mitchell's which aircraft it started using operationally on June 11<sup>th</sup>. Beaufort's were not used concurrently with B-25s as they were with Hudsons.

After service in Singapore, Number 1 Squadron was re-formed as a General Reconnaissance and Bombardment Squadron at Menangle, NSW, on December 1<sup>st</sup>, 1943.<sup>118</sup> It began its move to Gould on February 1<sup>st</sup>, 1944 with the final six of its aircraft arriving there on February 20<sup>th</sup>.<sup>119</sup> Operations commenced on March 20<sup>th</sup>, 1944.<sup>120</sup>

## **Camouflage**

All of 2SQN's Beauforts would have been delivered to the Squadron wearing factory standard disruptive pattern camouflage of Foliage Green (K3/177) and Earth Brown (K3/178) over Sky Blue (K3/195). Serial numbers should have been Medium Sea Grey (K3/183) and code letters were supposed to be Sky Blue. Black (K3/179) had been used on the under-surfaces of some of the Squadron's Hudson's and it is certain that some of those examples were still in service with 2SQN when their Beaufort's arrived but whether any of the Beaufort's received that alternative treatment isn't known. However, it is still a possibility and therefore, with regard to 2SQN Beauforts, there are two possible camouflage schemes:

1. Original factory standard scheme of Foliage Green and Earth Brown over Sky Blue, and
2. Original factory standard scheme with Sky Blue overpainted with Black.

With regard to 1SQN's Beauforts, since they remained in service for 9-months or so after the promulgation of the revised camouflage orders of 26MAY44, addition possibilities in terms of surface finish present themselves. I believe that there are four likely camouflage schemes:

1. Original factory standard scheme of Foliage Green and Earth Brown over Sky Blue,
2. Original factory standard scheme with Sky Blue overpainted with Black,
3. Revised standard scheme of overall Foliage Green,<sup>121</sup> or
4. Revised standard scheme with Black applied to the under-surfaces.<sup>122</sup>

Deliveries prior to the introduction of the revised AGI's on 26<sup>th</sup> May, 1944, would have been in the factory standard scheme (see above). Whilst the exact timing of the introduction of Black to overall Foliage Green aircraft is unknown and could have been any time after the date of the memorandum cited in option No.4 (above), Black under-sides seem to have begun to appear on 2SQN's OD41/NG43 (Olive Drab 41 over Neutral Grey 43) camouflaged B-25s around November/December 1944, so that might be an indicator of similar activities over at 1SQN with their Beauforts.

This scheme was a suggested alteration to the new AGI's made by AOC NWA in a memo to the Air Board dated 28<sup>th</sup> June, 1944, in which the application of "dead black" was to be applied to the under surfaces of otherwise Foliage Green Beauforts.<sup>123</sup>



Whilst this is NOT a 1 or 2SQN machine, it is an example of Black applied to an otherwise original factory standard scheme (option No.2, previous page) on an RAAF Beaufort VIII. [Stuart Kirkham adf-serials facebook page].



An unidentified 1SQN Beaufort at Gould. It is difficult to determine whether the upper camouflage is the original disruptive pattern of Foliage Green and Earth Brown or if it is the later, plain, Foliage Green. Whichever it is, at least the under-surface camouflage colour isn't in doubt – ~~Sky Blue~~ I mean, Black. [Image Owen Veal Darwin Aviation Museum via Mile Pegs NT facebook].

Those 2SQN machines that then went on to serve with 1SQN have been listed in the following table (see next page). The column headings should be self-explanatory. In the "Remarks" column the code letters assigned by 1SQN are given as well as my speculation as to whether the machine might have been repainted or not – by which I mean changed from the factory delivery scheme of Foliage Green and Earth Brown over Sky Blue. "No" means that I do not believe that the machine was repainted and therefore retained the Foliage Green and Earth Brown over Sky Blue

scheme (an aircraft so delivered to 1SQN that subsequently left and returned again will have a remark relative to that movement). “Possibly” means that, given the delivery date, where it was delivered from, whether it was re-coded on arrival and the requirements as stipulated in the AGI’s of 26MAY44, I believe that it seems feasible that the machine had been repainted in overall Foliage Green. “Unlikely” is based on similar parameters but differs mainly because of the unit from whence the machine was delivered from. I’m not suggesting that, just because an aircraft was sent to an Aircraft Repair Depot (ARD) that it was therefore repainted but, an aircraft returning to the Squadron from an ARD is much more likely to have been repainted rather than an aircraft returning from a period at a Repair and Salvage Unit (RSU) which, aside from re-spraying repairs and localised repainting are unlikely to have devoted the time and manpower to a complete re-spray – although it *is* possible that converting a Sky Blue under-surface finish to a Black *may* have occurred. An aircraft returning to the Squadron and then being re-coded is an indicator that it had been repainted (“... [a]ircraft under repair or being reconditioned ... which require to be repainted, are not to have code letters applied”<sup>124</sup>) – however, it isn’t a certainty.

I touched on it just now – bear in mind that I’m not talking about minor repairs to surface finish, touch-ups or other squadron-level activities – I’m referring to the application or not of a new camouflage scheme. Another fact to remember is that the last Australian built Beaufort, A9-700, was delivered during early September, 1944, wearing the original, pre-26MAY44, factory standard scheme of Foliage Green and Earth Brown over Sky Blue even though that scheme had been officially superseded more than three-months previously. That tells us two things, 1) that all of the MkVIIIIs left the factory in that scheme and 2) that scheme was still being delivered for service well after the introduction of the new AGI’s of 26MAY44.

2SQN Beauforts that subsequently served with 1SQN:

Left 2SQN as	Arrived Maint Unit	Delivered 1SQN	Remarks Code / Repaint
A9-361/KO-J	25MAY44 (14ARD 240hrly)	27SEP44	NA-X / Possibly
	31OCT44 (4RSU 2 x Eng/Ch)	07DEC44	NA-X / Unlikely
A9-363/KO-B	25MAY44 (14ARD)	30SEP44	NA-C / Possibly
A9-373/KO-P	22MAY44 (14ARD 240hrly)	20OCT44	NA-R / Possibly
A9-375/KO-R	04APR44 (4RSU)	19MAY44	NA-V / No
A9-378/KO-O	- (Handed over directly to 1SQN)	25MAY44	NA-G / No
	02JUN44 (4RSU repairs)	07JUN44	NA-Z / Unlikely
	04JUL44 (7AD 240hrly/14ARD)	15NOV44	NA-P / Possibly
A9-386/KO-N	15FEB44 (4RSU 240hrly/14ARD)	30AUG44	NA-Q / Possibly
A9-388/KO-K	- (Handed over directly to 1SQN)	25MAY44	NA-F / No
	09AUG44 (3AD Eng/Ch)	16DEC44	NA-W / Possibly
A9-392/KO-U	27FEB44 (4RSU 2 x Eng/Ch)	20MAY44	NA-K / No
A9-496/KO-Q	10APR44 (4RSU 240hrly/14ARDRP)	16JUN44	NA-O / Possibly, then NA-S
A9-519/KO-Y	- (Handed over directly to 1SQN)	25MAY44	NA-W / No
	12JUN44 (4RSU 240hrly)	16AUG44	NA-Y / Possibly
A9-540/KO-A	- (Handed over directly to 1SQN)	27MAY44	NA-L / No
	12JUN44 (4RSU 240hrly)	02AUG44	NA-L / No (under-sides possible)
A9-562/KO-F	26MAY44 (14ARDRP)	15JUN44	NA-N / Unlikely
A9-564/KO-D	- (Handed over directly to 1SQN)	25MAY44	NA-S / No
A9-576/KO-Z	30MAY44 (14ARD)	07JUN44	NA-A / No
	30JUN44 (4RSU repairs)	22NOV44	NA-H / Possibly
A9-578/KO-T	- (Handed over directly to 1SQN)	27MAY44	NA-Y / No
	15JUN44 (14ARD 240hrly rigging check)	20OCT44	NA-G / Possibly

A9-508/KO-W has not been included in the above table due to it not being onforwarded to 1SQN. After a period at 14ARD for airframe and performance checks, the aircraft was deemed unsuitable for operations. It went to 1APU and then, after periods at both 1AD and then 5AD, was received by 1OTU. Similarly, A9-560/KO-V is not included as it, likewise, didn’t serve with 1SQN.

The possible arrival scheme for those aircraft that hadn't seen previous service with 2SQN is offered in this table:

Serial	Delivered 1SQN	From Maint Unit	Remarks Code / Repaint
A9-473	08DEC43	1AD	NA-U / No
A9-475	05DEC43	1AD	NA-A / No
	06AUG44	7AD (240hrly)	NA-A / No (under-sides possible)
A9-477	08DEC43	1AD	NA-B / No
	18AUG44	7AD (240hrly) 14ARDRP	NA-B / No (under-sides possible)
A9-482	05DEC43	1AD	NA-D / No
	10AUG44	4RSU (240hrly)	NA-D / No (under-sides possible)
A9-483	05DEC43	1AD	NA-E / No
A9-485	08DEC43	1AD	NA-F / No
	28JUL44	7AD (240hrly)	NA-G / Possibly
A9-487	05DEC43	1AD	NA-G / No
	01SEP44	7AD (240hrly) 14ARDRP	NA-V / Possibly
A9-489	12DEC43	1AD	NA-H / No
	17JUN44	14ARD (240hrly)	(NA-H) / No
	03AUG44	14ARD (check & correction)	NA-H / No (under-sides possible)
A9-491	08DEC43	1AD	NA-J / No
	25DEC44	14ARD (240hrly)	NA-A / Possibly
A9-493	13FEB44	1APU	NA-M / No
A9-497	08DEC43		NA-N / No
	18JUL44	4RSU (240hrly)	NA-M / Possibly, then NA-N, then NA-M
A9-499	14DEC43	1AD	NA-O / No
	06JUL44	7AD (240hrly and repairs)	NA-O / No (under-sides possible)
A9-501	08DEC43		NA-P / No
	25JUN44	7AD (240hrly)	NA-P / No
A9-502	08DEC43	1AD	NA-Q / No
	24JUN44	4RSU (240hrly)	NA-Q / No (under-sides possible), NA-W
A9-503	11DEC43		NA-R / No
A9-509	10DEC43		NA-V / No
A9-541	06MAR44	1AD	NA-K / No
A9-568	14FEB44	2AD	NA-X / No
	04OCT44	4RSU (240hrly)	NA-U / Possibly
A9-570	14FEB44	2AD	NA-T / No
	04NOV44	4RSU (240hrly)	NA-Z / Possibly
A9-575	11JUL44	5AD	NA-W / Possibly, then NA-Q
A9-593	30JUN44	5AD	NA-E / Possibly
A9-597	03JUL44	5AD	NA-J / Possibly
	01NOV44	18RSU (240hrly)	NA-J / No (under-sides possible)
A9-603	06JUL44	5AD	NA-R / Possibly
A9-604	02JUL44	5AD	NA-K / Possibly
A9-610	29JUN44	5AD	NA-Z / Possibly
A9-647	25NOV44	14ARDRP	NA-F / Possibly
A9-649	10DEC44	14ARDRP	NA-K / Possibly
A9-650	26NOV44	14ARDRP	NA-E / Possibly
A9-657	21DEC44	14ARDRP	NA-B / Possibly
A9-660	23DEC44	14ARDRP	NA-S / Possibly

Aside from the code letters, the remarks in the preceding two tables are merely my own opinion and has been presented as such. Again, aside from the code letters, the information can not be definitive because there is too little evidence to be absolute – photographs of (particularly) 1SQN Beauforts are very rare. Having said that though, I hope it may help others form their own view, even if it is contrary.

## ASV

Beaufort VIII aircraft were factory equipped with ASV MkII. See the article in ADF-Serials Telegraph Volume 10, Issue 6, titled “Notes Regarding No.2 and No.13 Squadron Hudson’s”, especially pages 92 to 94, for an explanation on the very basics of how radar works and the arrangement of the Search array and Homing array antennas.

Yagi under-wing homing aerials were fitted to later deliveries and retrofitted to some earlier machines. Specific serial numbers are not known.



**The starboard-side Search Array on a Beaufort VIII with seven of the eight directional antennas visible. This aircraft is in overall Foliage Green.** [Peter Jackson Collection, State Library of SA image PRG 1614/2/49].

### Code Letter Colours

When Beaufort aircraft served with 2SQN, the officially approved colour for code letters was Sky Blue (K3/195). This was stipulated, “for all aircraft”, in AFCO A3/43, paragraph 8.<sup>125</sup> The approved colour for serial numbers had been “grey” since AGI C.11 Issue 3 of 3<sup>rd</sup> October, 1940,<sup>126</sup> and renamed Medium Sea Grey (K3/183) since AGI C.11 Issue 4 of 31<sup>st</sup> August, 1942.<sup>127</sup> These too were the official code letter and serial number colours for the first few months of Beaufort operations by 1SQN in North Western Area.

Photographic evidence is very sparse but, what little there is suggests that at least one of 2SQN’s Beauforts wore what I believe were Yellow code letters, thinly outlined in Black. This, according to Geoffrey Pentland (with regard to 13SQN), was “a practice in the squadron”.<sup>128</sup> 2SQN received 7 of its Beaufort’s from 13SQN with six of those aircraft being amongst the very first received. These aircraft are likely to have been handed over still wearing their former identities and, if they had been applied in the peculiar way claimed by Pentland, then the existence of such a style would have become known and the idea of perhaps implementing it themselves might have been formed. The only photographic evidence (that I know of) of a 2SQN Beaufort wearing this style of code letter was A9-576. It was not one of the former 13SQN machines.

At least one of 2SQN’s Beauforts had apparently Medium Sea Grey codes. Sky Blue was the official colour but whether Sky Blue was the norm at 2SQN as it should have been at that time isn’t known. See my previous article, “Notes Regarding No. 2 Squadron B-25s” in ADF-Serials Telegraph Volume 11, Issue 3, pages 87 to 93.

On 26<sup>th</sup> May, 1944, a new AGI regarding aircraft camouflage and markings was released and in it, Medium Sea Grey (K3/183) was stipulated for all identification markings (i.e. code letters and serial numbers).<sup>129</sup> These were the camouflage and markings instructions in force for the remainder of 1SQN’s Beaufort operations.

Due to the definite lack of photographic evidence to the contrary, it seems reasonable to assume that code letter colours were applied by 1SQN in accordance with AGI C11 Issue 4 of 31AUG42 and AFCO A3/43 and remained until sometime after these were superseded being then replaced by those applied in accordance with the revised AGI's. That, of course, should have been the position relative to 2SQN too, except for a few images being available which show contravening styles. Given the (albeit sparse) evidence of 2SQN Beauforts carrying alternative code letter colours and the much more prolific recording of the variety of code letter colours/styles employed on their B-25s, one should not rule out the (perhaps remote) possibility that 1SQN may have applied non-standard identification markings to some of their aircraft from time to time. Evidence, however, is lacking.



Number 2 Squadron's A9-560/KO-V obstructing the runway at Hughes, 18<sup>th</sup> May, 1944. [[adf-gallery.com.au](http://adf-gallery.com.au)].



The view from the other side. The aircraft is finished in factory standard disruptive camouflage scheme of Foliage Green and Earth Brown over Sky Blue. Serial number is Medium Sea Grey, as are (I think) the code letters. [[adf-gallery.com.au](http://adf-gallery.com.au)].

### ***Aircraft Code Letter Allocations (2SQN)***

The assignment of individual identification letters to 2SQN Beauforts looks like this:

<b>KO-</b>	<b>Jan-May 1944</b>
<b>A</b>	361/540
<b>B</b>	363
<b>C</b>	-
<b>D</b>	564
<b>E</b>	-
<b>F</b>	562
<b>G</b>	-
<b>H</b>	560
<b>I</b>	-
<b>J</b>	-/361
<b>K</b>	388
<b>L</b>	-
<b>M</b>	-
<b>N</b>	386
<b>O</b>	378
<b>P</b>	373
<b>Q</b>	496
<b>R</b>	375
<b>S</b>	379
<b>T</b>	578
<b>U</b>	392
<b>V</b>	-/560
<b>W</b>	508
<b>X</b>	-
<b>Y</b>	519
<b>Z</b>	576

Evidently, A9-379/KO-S wasn't used on operations although it did deploy to DRYSDALE as a back-up machine on at least two occasions (for HUG36/30 Mar and HUG37/31 Mar). Why it was effectively shielded from operational flying isn't clear.

Two points of interest though are: A9-519/KO-Y (which was a dual control aircraft until that fit was ordered removed around mid-April 1944) became NA-Y with 1SQN – the only example of an ex-2SQN machine being allocated the same individual identification letter and, A9-576/KO-Z which, although being NA-A with 1SQN, was still carrying “KO-Z” on its starboard side when it was involved in the ground collision with a Boomerang at Millingimbi.

### ***Code Letter Re-Assignments (2SQN)***

Of the eighteen individual Beaufort aircraft that flew on operations with 2SQN, only two of them had more than one individual identification letter allocated during their time with the Squadron.

A9-361	KO-A	became	KO-J
A9-560	KO-H		KO-V

A9-361 had been sent back to DAP during March 1944 for repairs to its centre section skin surfaces. Its allocated letter “A” had been taken over by A9-540 well before A9-361 returned. A9-560 was re-coded whilst in regular use by the Squadron. The reason is obscure.

### **Aircraft Code Letter Allocations (1SQN)**

The assignment of individual identification letters to 1SQN Beauforts looks like this:

<b>NA-</b>	<b>Mar-Jun 1944</b>	<b>Jul-Dec 1944</b>	<b>Jan 1945</b>
<b>A</b>	475/576/-	475/491	-
<b>B</b>	477	477/657	657
<b>C</b>	-	363	-
<b>D</b>	482	482/487/482	-
<b>E</b>	483	593/650	650
<b>F</b>	485/388/-	647	647
<b>G</b>	487/378/-	-/485/578	578
<b>H</b>	489	489/576	576
<b>I</b>	-	-	-
<b>J</b>	491	597	597
<b>K</b>	541/392	604/649	649
<b>L</b>	540	540	-
<b>M</b>	493	493/497/652/497	-
<b>N</b>	497/562	562/497/497/562	562
<b>O</b>	499/496	496/499	-
<b>P</b>	501	501/378	378
<b>Q</b>	502	502/575/386	-
<b>R</b>	503/603	603/373	-
<b>S</b>	564	-/496	660
<b>T</b>	570	570/-	-
<b>U</b>	473	473/568	-
<b>V</b>	509/375	375/487	-
<b>W</b>	508/519/-	575/502/388	388
<b>X</b>	568	568/361	361
<b>Y</b>	578/-	-/519	-
<b>Z</b>	-/378/-	610/570	570

### **Code Letter Re-Assignments (1SQN)**

1SQN seems to have had a bit of a fixation with the identification letters “M” and “N” with A9-497 and A9-562 swapping between those letters. A9-497 was “N” and another aircraft, A9-493, was “M”. When -493 relinquished that letter, A9-497 took it up and A9-562 became “N” in its place, then they swapped and then swapped again!

Here is a tabular analysis of the accuracy of the identification letter to serial number associations for each of 1SQN's and 2SQN's Beauforts in NWA for which an identification has been made.

Accuracy equals "Tasked and Recorded" divided by the sum of "Tasked and Recorded", "Tasked but Not Recorded" and "Not Tasked but Recorded", multiplied by 100.

Serial	Letters	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A9-361	KO-A	1	0	1	0	0	100
	KO-J	9	0	9	0	0	100
	NA-X	14	2	10	2	1	76.9
A9-363	KO-B	17	1	15	1	1	88.2
	NA-C	25	3	21	1	0	95.4
A9-373	KO-P	30	3	27	0	1	96.4
	NA-R	14	1	13	0	0	100
A9-375	KO-R	15	2	13	0	0	100
	NA-V	36	3	32	1	0	96.9
A9-378	KO-O	5	0	4	1	0	80.0
	NA-Z	6	0	6	0	1	85.7
	NA-P	18	1	17	0	1	94.4
A9-386	KO-N	9	1	8	0	0	100
	NA-Q	16	0	16	0	0	100
A9-388	KO-K	25	1	23	1	1	92.0
	NA-F	3	1	2	0	0	100
	NA-W	4	0	4	0	0	100
A9-392	KO-U	5	1	3	1	0	75.0
	NA-K	6	0	6	0	1	85.7
A9-473	NA-U	23	2	20	1	0	95.2
A9-475	NA-A	60	6	52	2	0	96.2
A9-477	NA-B	59	8	50	1	0	98.0
A9-482	NA-D	32	3	28	1	1	93.3
A9-483	NA-E	23	2	19	2	0	90.4
A9-485	NA-F	18	2	15	1	1	88.2
	NA-G	8	0	8	0	0	100
A9-487	NA-G	19	5	14	0	0	100
	NA-D	1	0	1	0	0	100
	NA-V	29	1	28	0	0	100
A9-489	NA-H	51	3	48	0	2	96.0
A9-491	NA-J	23	2	21	0	0	100
	NA-A	2	0	2	0	1	66.6
A9-493	NA-M	16	1	15	0	0	100
A9-496	KO-Q	27	0	27	0	2	93.1
	NA-O	10	0	10	0	1	90.9
	NA-S	27	4	22	1	0	95.6
A9-497	NA-N	26	3	23	0	0	100
	NA-M	4	1	3	0	0	100
	NA-N	23	2	20	1	1	90.9
	NA-M	7	0	7	0	0	100
A9-499	NA-O	41	7	33	1	1	94.2

Serial	Letters	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A9-501	NA-P	56	6	50	0	1	98.0
A9-502	NA-Q	34	3	30	1	0	96.7
	NA-W	27	4	23	0	0	100
A9-503	NA-R	23	2	21	0	0	100
A9-508	KO-W	28	4	22	2	0	91.6
A9-509	NA-V	4	0	4	0	0	100
A9-519	KO-Y	7	0	6	1	1	75.0
	NA-W	11	0	11	0	0	100
	NA-Y	32	0	32	0	1	96.9
A9-540	KO-A	26	2	24	0	0	100
	NA-L	29	4	25	0	2	92.5
A9-541	NA-K	6	1	5	0	0	100
A9-560	KO-H	11	2	9	0	0	100
	KO-V	2	1	1	0	0	100
A9-562	KO-F	16	1	15	0	0	100
	NA-N	13	2	11	0	0	100
	NA-M	2	0	2	0	0	100
	NA-N	12	2	10	0	0	100
A9-564	KO-D	19	1	18	0	0	100
	NA-S	9	0	9	0	0	100
A9-568	NA-X	29	1	28	0	0	100
	NA-U	21	1	19	1	1	90.4
A9-570	NA-T	23	1	22	0	0	100
	NA-Z	25	2	22	1	1	91.6
A9-575	NA-W	2	0	2	0	0	100
	NA-Q	8	0	8	0	0	100
A9-576	KO-Z	29	1	28	0	1	96.5
	NA-A	3	1	2	0	0	100
	NA-H	14	0	14	0	1	93.3
A9-578	KO-T	28	3	24	1	1	92.3
	NA-Y	4	1	3	0	0	100
	NA-G	17	1	17	0	0	100
A9-593	NA-E	20	0	20	0	0	100
A9-597	NA-J	42	1	40	1	2	93.0
A9-603	NA-R	28	1	27	0	1	96.4
A9-604	NA-K	35	3	31	1	0	96.8
A9-610	NA-Z	27	0	27	0	0	100
A9-647	NA-F	7	1	5	1	0	83.3
A9-649	NA-K	5	0	5	0	0	100
A9-650	NA-E	10	0	10	0	0	100
A9-657	NA-B	5	0	5	0	0	100
A9-660	NA-S	1	0	1	0	0	100

Of the 83 individual identities, the highest accuracy figure recorded was 100% on 44 occasions. The lowest accuracy figure recorded was 66.6%. Percentage returns in the 90's accounted for 29 of the identities, 6 returned an accuracy percentage figure in the 80's and 3 in the 70's. None of the individual accuracy figures comes close to being low enough to attribute to chance.

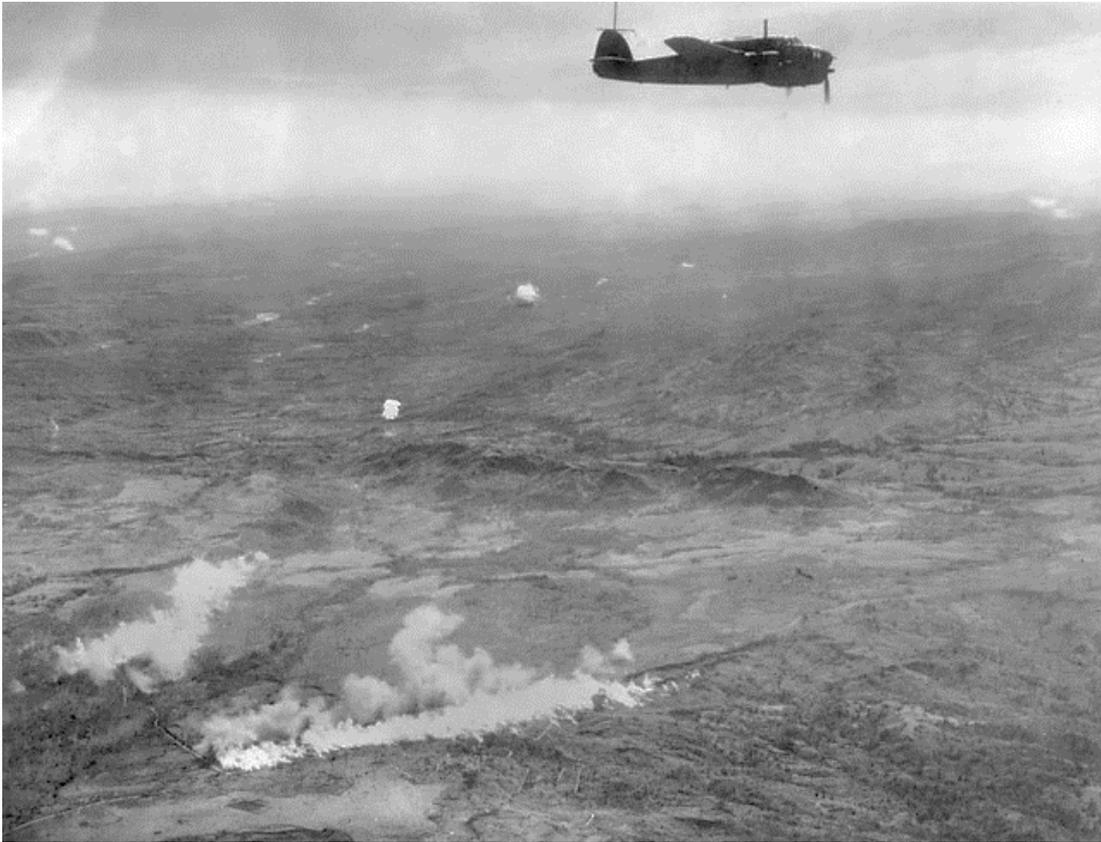


Here's another view of 2SQN's A9-560/KO-V on the runway at Hughes, looking just about directly south. The tower is just out of shot beyond the right-hand edge of the image. The path of -560s ground-loop clearly marked in rubber. [via [milepegsnt.com/wp-content/uploads/Clip\\_8](http://milepegsnt.com/wp-content/uploads/Clip_8)].

Speaking of the rarity of 1SQN Beaufort photographs, here are two of the three that I know of (hopefully there are a lot more "out there" and will become available at some point in the future):



At least eight of No.1 Squadron's Beauforts are in this image. Mina River is the light-coloured ribbon cutting through Timor's landscape from lower centre left to the left-hand edge of the image midway between the camera ship's horizontal stabilizer and the bottom of the photograph. The distant smoke, visible beneath the three Beauforts in the distance, is coming from the vicinity of Koepang. The aircraft appears to be wearing FG and EB over SB camouflage with SB code letters. [Image B. Rodd in *Roger Hayward, The Beaufort File (1990) 91*].



If the AWM caption for this image is correct and it *was* taken on 19APR44, then it was taken during a very large (by RAAF SWPA standards) operation the orders for which required a “[maximum number of Beauforts, B-25s and Beaufighters] to carry out Strike during daylight hours 19<sup>th</sup> April against Soe. Object to destroy stores dumps and personnel”.<sup>130</sup> It included 8 Beaufighters from 31SQN operating from Drysdale River Mission (COO9/19 Apr) acting as Top Cover, 12 B-25s from 18(NEI)SQN operating from their base at Batchelor (NEI33/19 Apr) and 15 Beaufort’s from 1SQN operating from Darwin and recovering to Drysdale River Mission (GLD25/19 Apr). The 15 that participated were (I’ll abbreviate the serial and only quote the individual letter): 570/T, 485/F, 502/Q, 541/K, 509/V, 482/D, 568/X, 493/M, 499/O, 497/N, 501/P, 487/G, 475/A, 477/B and 491/J. Given the poor quality of the photograph, it doesn’t seem possible to specifically identify this 1SQN Beaufort... [AWM OG0921].

Back on 13<sup>th</sup> March, I posted this on the adf-serials forum:

A gentleman over on the adf-serials facebook page made a post a few days ago regarding his interest in 1SQN Beauforts. Not being a facebook subscriber, if the text of a response isn’t displayed (which only a few are), I can’t open them to read. So, despite a few responses being posted, I’m unable to see what most of them were.

What I could see, though, was that someone responded with a grainy photo of a 1SQN Beaufort displaying the codes “NA-D” or “NA-O”. The resolution of the image was such that it’d be anyone’s guess as to which it might of actually been. The poster had been told that it was “A9-483” although he didn’t know how that identification was made. Again, the quality of the image means that the serial number is not discernible. The Beaufort is apparently wearing the disruptive camouflage scheme of RAAF Foliage Green (K3/177) and Earth Brown (K3/178) over RAAF Sky Blue (K3/195) with (evidently) Sky Blue codes.

I thought that both of those gentlemen (the original poster and the poster of the Beaufort image) might be interested in the following:

The machine in the image cannot be A9-483. That serial number was “NA-E”.

If the aircraft is “NA-D” then, in all likelihood, it is A9-482. “482” joined 1SQN in December, 1943, and deployed to Gould and was coded “NA-D”. It flew operationally until August, 1944, when it was sent to 4RSU for a 240-hourly. During that period, it would have been camouflaged in the manner described above. It returned to 1SQN during October, 1944, still coded “NA-D” and continued flying with the Squadron until January, 1945. It’s camouflage scheme during this second period isn’t known, but given

that it apparently retained its original individual identification letter “D”, it is reasonable to assume that it hadn’t had its top-sides repainted – although the undersides may have been painted Black.

Whilst A9-482 was at 4RSU, another aircraft, A9-487, received the individual identification letter “D” in early September, 1944. This aircraft had been “NA-G” and had just returned to the Squadron via 14ARD after maintenance at 7AD. The fact that it was re-coded strongly suggests that it had been repainted and had returned to the Squadron in the new scheme of overall Foliage Green. It only flew 1 operation as “D” and was re-coded “V” – no doubt because the original “D” was going to return to the Squadron still wearing that letter. So – A9-487 isn’t likely to be the aircraft in the image. If it is “NA-D”, then I reckon it must be A9-482.

However, if the image is actually of “NA-O”, then there are two choices.

First choice: A9-499. This machine joined 1SQN in December, 1943, and deployed to Gould. It was coded “NA-O” until May, 1944. It was damaged during a taxiing mishap and, with a 240-hourly due, it was sent to 7AD for repairs/maintenance. During this period, like A9-482, it would have been camouflaged in standard FG/EB over SB. It was returned to 1SQN early in July, 1944, still coded “NA-O” (which suggests to me no top-side change in colours, although the undersides might have been painted Black). It continued on with 1SQN until November, 1944, when it went to 14ARD and then to 32SQN.

Second choice: A9-496. This had been a 2SQN machine (KO-Q) and was handed over to 1SQN around the middle of June, 1944, and was coded “NA-O”. At 2SQN it would have worn standard FG/EB over SB camouflage. In between postings, the aircraft spent a bit of time at 4RSU and then a short period of storage at 14ARD RP. It may or may not have been repainted. I don’t believe that it would have received a full repaint at an RSU (although black undersides were a possibility). Whether 14ARD gave it a fresh coat of paint or not is unknown. When A9-499 (first choice) returned to 1SQN still wearing its “NA-O” codes, it and 496 co-existed both as “NA-O” for a week or two until mid-July, when 496 was re-coded “NA-S”.

I hope this bit of back ground will be of interest.

This was that “grainy photo” referred to:



It seems that this is an enlarged portion of image AWM OG0921 taken during the Strike on Soe on 19<sup>th</sup> April, 1944. Having the upper index mark in an identical position relative to the aircraft on both images (I think) is too much of a coincidence to be anything other than proof of this being a cropped enlargement of that photograph. *[via Nick Dixon adf-serials facebook].*

You’d probably have to make up your own mind as to whether the individual aircraft identification letter is a “D” or an “O”. But, as discussed in the forum post, if it is “D” then it’s A9-482. If it’s “O” then the aircraft is A9-499. Given the date, it can’t be A9-496.

In the introduction to the first instalment of this series, I remarked that it was based on “the summary sections of manuscripts that I was compiling my research into”, the purpose of which was to prove serial number and code letter associations for certain aircraft.<sup>131</sup> Well, here is an introductory snippet and the tables for one of the Beaufort’s:

## How to Read the Tables of Evidence

The aircraft have been listed in numerical order by serial number with each aircraft having a page to itself, each of which will have a title similar to this:

### Beaufort VIII A9-482

The first line is the type and mark of the aircraft. In this case, the type: “Beaufort” and the mark: “Mark 8”.

The second line is the RAAF serial number of the aircraft. “A9” was the prefix given to Beaufort aircraft. The letter “A” (or: A-group) was a stores/accounting letter signifying aircraft – it did not and does not have anything to do with the role or use of an aircraft – it simply means aircraft. “L” was for clothing and associated equipment. If you were in the army and needed a replacement article of uniform apparel, you went to Q-stores. In the RAAF, you went down to “L-group”. The number “9” was the section identifier for Beaufort aircraft. So, “A9-482” meant: Aircraft, Beaufort, number four hundred and eighty-two.

If the aircraft flew on operations, a table similar to this will appear:

<b>Mission/Duty Date</b>	<b>Aircraft Letters</b>	<b>W/T Call sign</b>	<b>R/T Call sign</b>	<b>Remarks</b>
GLD19/7 06/10	NA-D	4FND		Whitford.
GLD21/1 07/10	NA-D	IU74D		Simms.
GLD25/3 08/10	NA-A	HN2A		Kagi. Apparently replaced A9-475.
GLD30/1 11/10	NA-D	IU74D		Whitford.
GLD34/7 12/10	NA-D	HK8D		Simms.
GLD8/1 24/10	NA-D	TH32D		Replaced by A9-610.
GLD10/1 26/10	NA-D	TH32D		Whitford.

The first row contains the titles, in bold, of the individual columns. Each successive row is for each individual operational flight that a particular aircraft has been recorded as having been tasked to fly (as derived from relevant Forms Mauve) and has been cross-referenced with a particular serial number (as derived from, typically, unit history sheets).

The column titles are:

**Mission/Duty Date** – contains the Aircraft Identification Group, then the date the mission was launched in dd/m format.

**Aircraft Letters** – being the Squadrons code letters (in this case “NA” for Number 1 Squadron) and the aircraft’s individual identification letter (in this case “D”). These full three-letter codes were included in acknowledgment Forms Mauve after about mid-April, 1943. If the code letters appear in normal font, then they were specifically quoted in the Form Mauve. If they are in *italics*, then they weren’t and have been assumed – typically on the evidence of the W/T call sign suffix letter. In the table above, all of the Aircraft Letters appear in normal font – they were all recorded in the relevant Forms Mauve.

**W/T Call sign** – being the Wireless Telegraphy call sign (transmitted by Morse code) as quoted in the relevant Form Mauve for this aircraft on this flight. If it is in normal font, it appears as quoted in the Form Mauve; if it is in *italics*, it is assumed. In the table, above, all of the W/T call signs appear in normal font – they were all recorded in the relevant Forms Mauve. Notice how the suffix letter matches the aircraft’s individual identification letter.

**R/T Call sign** – being the Radio Telephony call sign (transmitted by voice) if quoted in the relevant Form Mauve. These were not often quoted and when they were they were often listed as a word only i.e. without the suffix letter. Despite that, it should be understood that these call signs would ALWAYS have used a suffix – most commonly it was the aircrafts individual identification letter but, sometimes, it was a number or a non-matching alphabetic letter. With 1SQN and 2SQN Beauforts, if R/T call signs were used, it is reasonable to assume that the aircrafts individual identification letter was used as the suffix.

**Remarks** – for the aircraft captain’s surname and for any pertinent information that might be available, or to explain inconsistencies.

In the above table, the first row shows that this aircraft flew mission Gould 19 as duty 7 on 6<sup>th</sup> October. The assigned aircraft letters according to the acknowledgment Form Mauve were “NA-D”. The W/T call sign was “4FND”. There was no R/T call sign mentioned in the Form Mauve. The surname of the pilot on that flight was “Whitford”. Each un-highlighted row indicates that the aircraft letters tasked in the Form Mauve (in this case the “NA-D”s) matches the serial number recorded in the Squadron’s Operations Record Book as having flown the task. It will also be noted that that individual letter, in this case “D”, matches the W/T call sign suffix letter. Again, information will be in *italics* only if it wasn’t specifically noted as such in official, contemporaneous, documentation.

The third row is highlighted in light green. This indicates that, according to the Squadron’s A51, this aircraft (A9-482) flew on mission Gould 25 on 8<sup>th</sup> October. However, according to the acknowledgment Form Mauve, the tasked aircrafts identification letters were “NA-A” and the W/T call sign suffix letter was “A” and this does not match the serial number of the aircraft for which this table refers. The aircraft captain’s surname was Kagi and a note is included suggesting that the tasked aircraft, aircraft “NA-A”, which was A9-475, was apparently replaced by the aircraft for which this table refers; this is because the Unit History Sheet records A9-482 as flying this mission and not A9-475. The table for aircraft A9-475 will have an entry for this mission also (because it was tasked to fly), but it will be highlighted in dark grey because it did not actually fly it.

The sixth row, highlighted in dark grey, shows that this aircraft was tasked to fly Gould 8 duty 1 on 24<sup>th</sup> October, but didn’t actually fly because it was replaced by another Beaufort aircraft, A9-610. In this case, the entry for this mission for the other aircraft, A9-610, will not be highlighted because the aircraft letters and call sign of the replacement aircraft were signalled; just a comment will appear in the “Remarks” column for that flight that the aircraft replaced A9-482 (NA-D) on that mission.

The mission, date, call sign (and later) the captains surname information within these tables has all come from the Air Operations Room documents held by the Australian War Memorial. This information has been correlated to a certain serial number by cross-referencing with the units A50 and A51 (unit history sheets) which documents are held by the National Archives of Australia and many of which have been digitised and are freely accessible, on-line. The aircraft history information relative to each airframe comes from the aircrafts particular aircraft status card (E/E.88), which documents are also held by the National Archives of Australia and like the unit history sheets, many of them are freely accessible.

To individually cite each and every item of information found within any particular table would produce many more pages of citations than there are pages of aircraft tables therefore, these references have not been cited, but listed only in the bibliography. This should still provide enough specific guidance, by comparing dates, for anyone to find the exact primary source information that has been used in any given circumstance. Similarly, the aircraft type and serial number at the head of each page, can be taken to have come from the aircrafts own E/E.88 – see bibliography for details, if it hasn’t, it’ll have a citation. Any text appearing before or after a particular table, that has been derived from something that wasn’t my own opinion, experience or some widely established (general knowledge) fact, will also have a citation.

## **Purpose**

The purpose then, is to fill a gap in that portion of the historical record relating to the alphanumeric identification of certain aircraft of the Royal Australian Air Force during the 1939 to 1945 war and to correct inaccuracies and distortions that have inevitably crept in to that record.

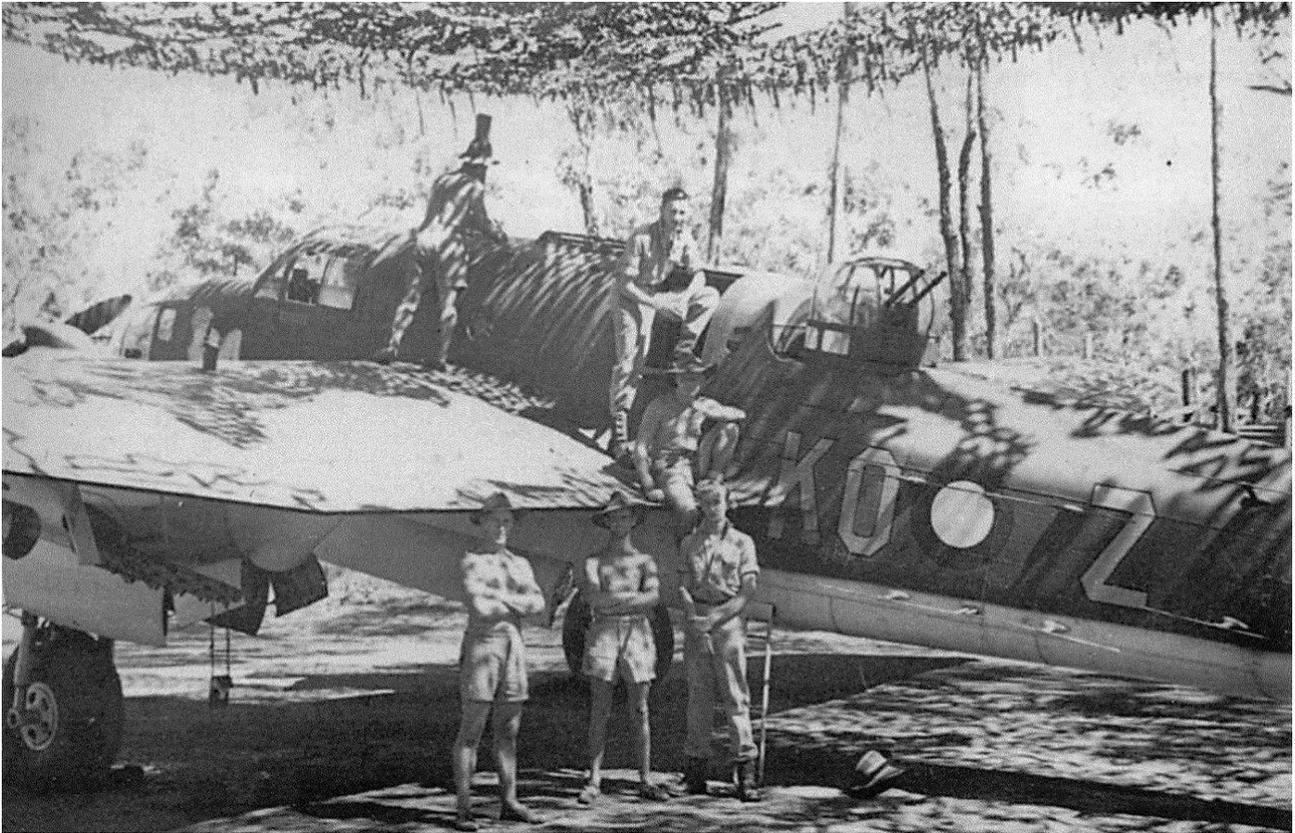
**Beaufort VIII**  
**A9-576**  
**“Nitesortie”**

2AD received this machine from DAP on February 1<sup>st</sup>, 1944. It was then received by 2SQN on March 10<sup>th</sup>.<sup>132</sup> This is the machines operational record:

1944:

Mission/Duty Date	Aircraft Letters	W/T Call sign	R/T Call sign	Remarks
HUG45/5 14/3	KO-Z	3GAO		Henderson. Flight completed before 6 am. Mis-match between call sign suffix and aircraft allocation – A51 records A9-576 as flying which matches aircraft allocation.
HUG44/3 14/3	KO-Z	JS5Z		Dinsdale.
HUG46/5 15/3	KO-Z	WZ6Z		Hill.
HUG7/2 17/3	KO-Z	YS4Z		Dinsdale.
HUG12/2 19/3	KO-Z	GA9Z		Hayes.
HUG17/2 21/3	KO-Z	WV6Z		Hocking.
HUG19/2 22/3	KO-Z	XF1Z		Lee.
HUG26/3 26/3	KO-Z	VA1Z FR2Z	Nettle Sunbeam	Lee. C/S change over 261200Z.
HUG32/2 28/3	KO-Z	UN2Z		Lee.
HUG41/2 02/4	KO-Z	LG7Z GH6Z	Conduct Measles	Lee. C/S change over 021200Z.
HUG45/3 04/4	KO-Z	VN2Z FO5Z	Hoodlum Dawdle	Hayes. C/S change over 041200Z.
HUG46/1 05/4	KO-Z	UA9Z JU6Z	Dawdle Dingo	Lee. C/S change over 051200Z.
HUG1/5 06/4	KO-Z	FP8Z 3CAZ	Dingo Panic	Weston. C/S change over 061200Z.
HUG3/2 07/4	KO-Z	LZ1Z	Defer	Simpson.
HUG6/1 09/4	KO-Z	FM7Z		Hill.
HUG4/5 16/4	KO-Z	4KJZ 4LQZ		Squires.
HUG27/4 17/4	KO-T	3GNT		Dinsdale. Apparently replaced A9-578.
HUG36/3 19/4	KO-Z	ZM7Z	Rental	Henderson. Replaced A9-564
HUG40/3 21/4	KO-Z	HR3Z		Squires. Replaced A9-560.
HUG42/1 22/4	KO-Z	JU6Z		Lee.
HUG2/6 25/4	KO-Z	UG3Z	Choppy	Squires.
HUG3/5 26/4	KO-Z	VB2Z	Inflow	Pierce.
HUG13/3 30/4	KO-Z	PN7Z		Ditchburn. RTB, U/S.
HUG20/2 02/5	KO-Z	4MCZ		Unserviceable, replaced by A9-562.
HUG27/2 05/5	KO-Z	QS5Z		Weston.
HUG29/4 06/5	KO-Z	KE8Z		Squires.
HUG34/1 07/5	KO-Z	UI8Z	Viscount	Dinsdale.
HUG35/1 08/5	KO-Z	JY5Z		Squires.
HUG38/1 09/5	KO-Z	QQ1Z		Kerr. A51: Avery.
HUG2/6 13/5	KO-Z	DN8Z	Bisto	Simpson.

It was received by 14ARD on May 30<sup>th</sup> and was then received by 1SQN on June 7<sup>th</sup>.<sup>133</sup>



Although the serial number isn't visible in this shot, we know that it was A9-576, because that was the only 2SQN Beaufort to carry the individual identification letter "Z". A seven-symbol bomb log is visible under the cockpit window and a portion of nose art depicting a reclining lady. At the left-hand edge of the image, the shroud surrounding the stabilizing fins of a 250-lb bomb is visible and then inboard of that, the flame damping exhaust extension. The search aerial array of the ASV Mk II system is evident on the fuselage. I believe the code letters are Yellow, outlined in Black; your view may be different. [Aviation Heritage Museum of WA image P030086 via Mike Mirkovic].



Forward quarter view of 2SQN's A9-576/KO-Z. The name, nose art and bomb log are visible from this aspect; also the typical style ASV Homing array – no Yagi aerials under the wings. [Image via Kas Grigonis, ADF-Serials facebook page].

A9-576s operational service with 1SQN is detailed below:

1944:

Mission/Duty Date	Aircraft Letters	W/T Call sign	R/T Call sign	Remarks
GLD43/3 13/6	NA-A	2LYA		Hobson.
GLD2/4 16/6	NA-A	UA9A		Lipman.
GLD6/1 17/6	NA-A	LS6A		Damaged in taxiing accident at MIL.

Whilst waiting to take-off from Milingimbi on mission Gould 6/17 June, an 83SQN Boomerang, A46-125/MH-K (call sign Whiting Red 2), taxied into the starboard wing of A9-576.<sup>134</sup>

Wheels up for A9-576 was planned for 170200Z (11:30 am Darwin local time).<sup>135</sup> At 11:23 am, two Boomerangs returned to Milingimbi from a Convoy Escort mission and landed on runway 11. They rolled through past the intersection of the north-south runway and, once they were clear, A9-576, which had been holding short of runway 11 on the north-south runway, entered and back-tracked along runway 11 back to the threshold at the western end. Meanwhile, the two Boomerangs and turned around and were also back-tracking on runway 11, heading for their dispersal on the Western Loop.<sup>136</sup> The Beaufort, which had now reached the upwind threshold and turned around and lined-up for departure was holding for the two Boomerangs. The leading Boomerang, A46-150, had turned slightly right in order to pass in front of and then around the Beaufort, but the second Boomerang, A46-125, continued on and collided with A9-576's outer starboard wing.<sup>137</sup>



At first glance, it would be reasonable to assume that this is 2SQN's A9-576/KO-Z again. However, by the time this image was captured, A9-576 was a 1SQN machine evidently coded "NA-A". This shot shows the aftermath of the accident at Milingimbi on June 17<sup>th</sup>, 1944. The interest here is because it shows that A9-576 was still wearing its former 2SQN identity of "KO-Z" – at least on the starboard side. Was this aircraft marked "NA-A" on the port side? The aircraft was later repaired and returned to service with 1SQN as "NA-H". Compare the exhaust pipe in this image with those whilst with 2SQN, no flame damper exhaust. [Image: F.F. Smith via Roger Hayward, "The Beaufort File" (1990) 88].

4RSU received the aircraft on June 30<sup>th</sup> and, after necessary repairs, handed it back to 1SQN on November 22<sup>nd</sup>.<sup>138</sup>

1944:

Mission/Duty Date	Aircraft Letters	W/T Call sign	R/T Call sign	Remarks
GLD7/5 25/11	NA-H	ZT26H		Lipman. Replaced A9-540 which RTB'd.
GLD89/11 26/11	NA-H	VJ4H		Dean. A51: not recorded.
GLD14/1 28/11	NA-H	XY69H		Whitford.
GLD17/2 29/11	NA-H	ZT26H		Bolton.
GLD23/1 01/12	NA-H	RT7H		Ottaway.
GLD24/2 02/12	NA-H	RP4H		Lipman.
GLD29/4 04/12	NA-B	2SBB		McAtee. A51: Ottaway. Apparently replaced A9-477.
GLD40/2 08/12	NA-H	XY69H		Depassey.
GLD44/2 09/12	NA-H	TH32H		McAtee.
GLD1/4 10/12	NA-H	1DW6H		Dean. Replaced A9-361.
GLD4/3 11/12	NA-H	ZT26H		Lipman. RTB, U/S. A51: A9-568 in error.
GLD6/2 12/12	NA-H	XY69H		Lipman.
GLD12/2 14/12	NA-H	ZT26H		Trethewey.
GLD40/2 23/12	NA-H	XY69H		Lipman.
GLD2/1 01/1	NA-H	3CSH		Hudson.

On January 15<sup>th</sup>, 1945, the aircraft was received by 10TU.<sup>139</sup>

Counting “known” replacements, A9-576 was tasked to fly on 29 operations whilst with 2SQN. Of those 29, it launched on 28 and completed 27. It was evidently used as a replacement on 1 other mission giving a completed mission tally of 28.

With 1SQN it flew 2 of the 3 missions planned for it prior to being damaged in the taxiing incident. After repairs, and again counting “known” replacements, it was tasked 14 times, completing 13 of those missions. It was apparently used as a replacement for another one making 14 completed operations after repair.

Its mission record whilst in North Western Area was:

<u>Tasked</u>	<u>DNF</u>	<u>RTB</u>	<u>Used as Replacement</u>	<u>Completed Operations</u>
29	1	1	1	<b>28</b>
3	1	0	0	<b>2</b>
14	0	1	1	<b>14</b>
46	2	2	2	<b>44</b>

Where “DNF” means: Did Not Fly and “RTB” means: Returned To Base.

So, there you have it. I hope you found these articles of some interest. If you haven't seen the others, they can be found in these issues of ADF-Serials Telegraph:

Vol 10, Iss 5: "Notes Regarding No.13 Squadron Hudson's – Squadron Code Letters" pp74-85,

Vol 10, Iss 6: "Notes Regarding No.2 and No.13 Squadron Hudsons" pp86-98,

Vol 11, Iss 1: "Notes Regarding No.31 Squadron Beaufighters" pp61-79,

Vol 11, Iss 2: "Notes Regarding No.18(NEI)SQN B-25s" pp71-102,

Vol 11, Iss 3: "Notes Regarding No.2 Squadron B-25s" pp77-106.

## Bibliography

### *Primary Sources*

Aircraft Status Cards Beaufort A9-500 to A9-599; NAA: A10297, BLOCK 72.

Beaufort A9 Accidents Part 22; NAA: A9845, 262.

Boomerang A46 Accidents Part 2; NAA: A9845, 206.

Camouflage of Aircraft; NAA: A11095, 107/4/AIR PART A.

DTS – Publication of Technical Order – Publication of Aircraft General Instruction – Part 3 – Section C – Instruction No 1 – Camouflage Schemes and Identification Markings; NAA: A705, 150/4/5056.

RAAF Unit History Sheets Number 1 Squadron Jul 25 – Feb 46; NAA: A9186, 1.

### *Secondary Sources*

Garry Shepherdson, *The Identification of Various Aircraft; Beaufort VIII Aircraft of Number 1 Squadron, March 1944, to January 1945 and of Number 2 Squadron, January to May 1944* (unpublished manuscript).

Roger Hayward, *The Beaufort File* (1990).

Geoffrey Pentland, *RAAF Camouflage & Markings 1939-45 Vol 2* (1989).

# Winging-It with the Deltas

Alf Allen

[Alf Allen wrote this in October 2018 as ex-Air Force personnel were thinking of the RAAF's Centenary approaching in 2021]

## RAAF Jubilees

With the RAAF's centenary not too far away, it behoves me to chronicle my part in its Golden Jubilee nearly 50 years ago, while some readers may still recall the events.

## Preamble

'Winging-it' is a colloquialism for 'having a go without any forethought'. Nothing could be further from the truth regarding the preparation for the Deltas and their participation in the RAAF's Golden Jubilee displays in 1971. I have used the term as a metaphor for my slot as Delta4 in the middle of the five-ship close formation element.

This post is intended to be read as a supplement to Dave Robson's excellent 'The Deltas' on the 77SQN ASSOCIATION website. Dave was Solo 2 and while his accounts are extremely comprehensive' my experiences and recollections are obviously going to be of a different slant in some respects. Also, putting down thoughts so long after the event possibly blurs fact and fantasy.

## Genesis

Once 77SQN had been assigned the task of forming an aerobatic team, the 'powers that be' (OPCOM/DEFAIR) did not take much convincing that a 5-ship formation offered significantly more 'punch' than a 4-ship, and that a Solo would be a good way of filling in the gaps while the formation manoeuvred for the next pass. Ultimately, of course, we ended up with two, opposing solos, with spectacular effect.

The Squadron then decided that those pilots who would be surplus to the aeros task would either be absorbed within C Flight with its dedicated photo-recce role utilising the KA56B1 horizon-to-horizon camera, or be temporarily attached to our 'opposition', 76 Sqn, just down the road. As it turned out only one pilot, PLTOFF Steve Low, newly arrived from OCU, was sent packing.

## Close Formation

All fighter pilots routinely fly in close formation, but the 'moves' involved are surprisingly quite limited, being primarily to get multiple aircraft out on task away from the base and then recover them to base at the end of the sortie. This consisted of pairs take-offs (with 10 seconds between pairs if more than two aircraft are in the 'package') then, during the latter part of the recovery, joining up in echelon right (usually no more than four) to the right of and stepped back from the leader, for the run in to the airfield and individually breaking away for individual landings. In a perfect world as each aircraft approached the landing threshold the one ahead would be 1500feet away, firmly 'planted' on the runway.

Having said that, our definitive display routine was for Deltas 1,2&3 to take-off in Vic, followed by Deltas 4&5 in echelon. The Solos would then line up at opposite ends of the runway (on their respective halves!), roll in unison, with their first cross-over immediately after getting airborne. Spectacular!

## Working Up

My first practice formation sortie was on 28OCT70. This would have been a 2-ship and would have involved nothing more demanding than some gentle wingovers (a climbing, then descending turn, in the same direction), a lead change, then the other guy having a go. The first aeros followed five sorties later and would probably have been with the CO or the B Flt Commander in the lead. Obviously, we had to be assessed as possessing sufficient quantities of 'the right stuff' to achieve the end objective – something I was all too well aware of being the 'boggie' who had completed Mirage OCU only six months previously.

After four of these sorties I am supposing we were all assessed as being fit to continue and then a series of various composition sorties followed until 25 Nov 70 when we settled into a 5-ship routine, presumably with our formation

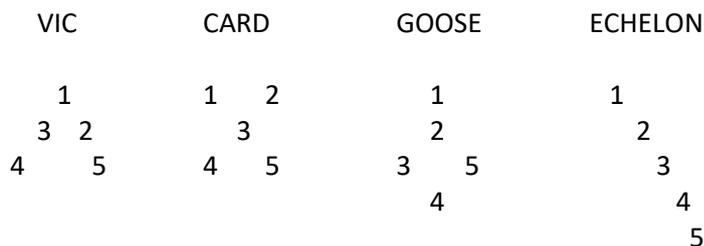
positions assigned and the nucleus of a display formulated. For my sins as Delta 4 I spent most of my time in echelon left – ‘for my sins’ because seated in the cockpit with left hand on throttle and right hand on the stick, one feels more comfortable looking to the left – as in echelon right.

Next was the need for the formation to reference to a ground position and in the first instance a small coastal headland in our practice area – immediately north of Tea Gardens – was chosen. We then needed someone on the ground to critique us, and I believe SQNLDR Hugh Collits was choppered out to ‘crowd centre’. But now we really needed a runway to reference to, particularly once the solos joined with us, and the only one available was Williamtown. Thus, from then on almost all of our practices were overhead the Base, which must have been at considerable inconvenience to 76SQN, 20CU, 5OTU and the occasional RPT service.

There were, however, many hurdles to be cleared before we displayed at the Base for the first time...

**Formation Positions**

Diagrammatically, viewed from above, the positions were thus:



The standard echelon formation position in the Mirage was stepped backed quite a bit, and this, coupled with a long and skinny airframe resulted in all formation configurations appearing ‘long and skinny’. To rectify this to some degree echelon was moved forward a few feet (but not inwards) until the pilot’s eye view was in line with the end of the afterburner (A/B) cold flaps; that is, the end of the jet pipe. This is only evident in still photography in plan-form shots.



**Deltas 5-ship “Vic”, displaying correct echelon positioning.** [via Alf Allen].

All compositions were ‘building blocks’ of echelon and line astern, with the exception of Delta 2 John Archer in Card where the lateral separation abeam Delta 1 was purely by ‘calibrated eyeball’ and lots of practise. Thus, for example,

in Card, Delta 3 Chris Mirow simultaneously flew echelon right off Delta1 and echelon left off Delta 2; while I flew line astern on Delta1 and 'triangulated' distance back by lining up the heads of Deltas 2&3.



**Deltas 5-ship "Card" formation.** [via Dave Robson].

Additionally, those of us 'down the back' would, when the need arose approaching crowd centre, 'fudge' our positioning to 'dress' the formation. For example, if I was lagging a little in Card and did not appear to be correcting (for whatever reason) Delta 5 Nick Ford would drop back a little to 'square up' the presentation. While this may appear to be potentially a 'chicken and egg' scenario, it actually worked!

In terms of station-keeping difficulty, after Delta 2 in Card I would suggest Deltas 3&5 in a Goose barrel roll was next, considering that a steep turn was two-dimensional with relatively constant 'g' and airspeed; a loop was two-dimensional but with greatly varying 'g' and airspeed; while a barrel roll was three-dimensional with somewhat varying 'g' and airspeed.

A Box-4 barrel roll is a relatively simple manoeuvre, but is made significantly more complicated when turned into a Goose (though my position as third in line astern was not overly demanding). However, Delta 2's modified barrel roll (being 'deep' on Delta 1) resulted in Deltas 3 & 5 needing to work very hard to keep the box. If you take a critical look at a still photo of a Goose roll you may pick that while 3 & 5 are in position, quite often fuselages may not be precisely aligned nor bank angles uniform. I have no aerodynamic explanation for this phenomenon and will dismiss it by saying that 'dark forces were at play'.



**Deltas 5-ship "Goose" formation.** [via Alf Allen].

The definitive five-ship sequence follows. One should remember that the two solos were mostly performing opposition passes while we were repositioning, though on the final Vic steep turn Solo 1 joined up with us 'in the slot' while Solo 2 (the CO) flashed by between us and the crowd.

Vic loop, with 90deg roll right  
wingover right  
barrel roll left  
wingover right  
steep turn left  
wingover left  
Vic into Card loop  
Card steep turn left  
wingover right into Goose  
Goose barrel roll left  
wingover right into Vic  
Vic steep turn left      Solo 2 joins up in the slot to form a true delta  
wingover left      Solo 2 separates  
bomb burst

The station change from Vic into Card going up the loop presented some initial challenges, but with practise we regularly completed the change by the apex. There was added incentive for us 'down the back' to get 'into the slot' by this point as we were sitting 'below' the leader and thus flew loops of greater radius; if we were not slotted by the time the leader's nose came down through the horizon and he started accelerating, we would be 'left for dead'.

#### **Afterburner (A/B)**

The display sequence necessitated the use of afterburner during the first half of the 4g loop, which sounds straightforward enough, but the truth of the matter is that afterburner was not sequenced routinely when airborne in close formation.

All Mirage pilots were very familiar with de-selecting A/B in formation after pairs takeoffs, (with it having been selected on the ground immediately after brakes release) but NEVER did we select A/B airborne in close formation. The obvious issue being that if light-ups were not in unison, fore/aft displacement would be immediate, and had the potential to get very messy if one or more aircraft was in line astern.

This was but one example of something which at first glance was innocuous, but required practise to the n<sup>th</sup> degree until we were as familiar with what was going on in the cockpits around us as we were in our own.

Furthermore, it was standard operating procedure to check that engine turbine temperature (T4) was at least 600deg C prior to lighting the burner, but even a glance into the cockpit was unacceptable to us in close formation, particularly when pulling g. Thus, we adopted the logic that if the leader's T4 was achieved, then ours must be as well.

Another problem we faced when in A/B in close formation was the limited variable thrust range available for station-keeping.

The ATAR engine produced a 'step input' of about 2,000lb thrust when mini-A/B was selected, with a further 2,000lb available in the variable range. Thus, the mid-range A/B setting that Delta 1 chose was critical – if it was too low wingman may have to blip speedbrakes in mini-burner to prevent overshooting, and if it was too high wingmen could be 'left for dead'. Furthermore, momentary excursions out of or into A/B were prohibited in the flight manual: so, it was a case of 'one in, all in; one out, all out'.

We soon discovered that despite obviously being within engineering parameters, some aircraft were poor performers, and were quarantined from our pool of aircraft. The A/B section in Nick's aircraft was so far short of its 'rated' power that it's a wonder it had not been noticed in standard squadron operations! We eventually settled on an aircraft 'mix' which alleviated these issues and flew these individually allocated aircraft where possible; but even so Chris needed a

little extra when under 'g' in his unique #3 slot in Card. A sympathetic 'sumpie' unilaterally 'tweaked' the A/B fuel flow setting: Problem solved!

My aircraft was A3-39, which I flew fairly consistently until the Edinburgh dress rehearsal on 16 Apr 71, after which it had no further participation in the Deltas routine. It must have had some major U/S at the time but it did survive until the end of Mirage ops, being retired in November 1987.

### **The 'Boggies' Revolt'**

A formation pair is a relatively straightforward exercise in straight and level flight and in a smooth air mass. Introduce manoeuvring, power changes, station changes and turbulence and the demands increase manyfold. Now add a third player such that he, #3, is flying off #2, who is flying off the leader, and the complexity increases by an order of magnitude.

This is why we needed so much practice.

Further, regardless of how finely we honed our station-keeping skills, all will be to no avail if the team leader was not, in turn, refining his own skills of smoothly positioning his aircraft in pitch and roll such that we wingmen were able to confidently match his inputs, and indeed, with practice, anticipate his inputs.

The original plan was for the CO, WGCDR Bill Simmonds, to lead the 5-ship section. Things got underway as planned, but as time went by there were other, increasing, demands upon his time and very often the B FLT CDR, SQNLDR Bruce Grayson, was called in to lead. At the same time there were increasing demands upon us to 'smarten up our act' on the wing; and on the leader, as we had now progressed in to manoeuvring with respect to a ground reference point and the concomitant considerations of wind effect, etc.

It was becoming increasingly obvious to us 'on the wing' that we were faring far better with the FLTCDR than we were with the CO, and reluctantly we decided the matter had to be addressed. Collectively we approached Bruce Grayson with our concerns and he then had the unenviable task of putting our case to the CO. Bill Simmonds, being acutely aware of the necessity for wingmen to have full confidence in their leader, immediately agreed and called us all into his office to, in turn, put us at ease. (It's not a common occurrence for junior officers to put their CO 'on the spot'!) We all have the utmost respect for him 'taking it on the chin' as he did.

### **Radio Failure**

To this day I suggest that if an aircraft in a large gaggle is to 'get lost on the airwaves' it will most likely happen when changing from one frequency to another. This was partially acknowledged by the air traffic controllers (ATC) at each display location organising the airspace on the day such that all competing aircraft remained on the one frequency (tower) during their individual routines.

However, radios could and did fail randomly, which could usually be rectified by selecting the alternate radio (the 'red set') in the Mirage. Nevertheless, even this simple selection was beyond us as these sets were low down on the forward left console: we were always 'heads out', with left hand on the throttle and right hand on the stick for the continual multiplicity of small inputs necessary for precise station-keeping.

As our proficiency in the sequences improved, we eventually reached the stage where we 'knew the routine backwards'. We were then given the option at the briefing preceding each flight to continue with the show, should we individually experience radio failure. I believe this may have happened on one occasion, but cannot recall whether it was during a prac or a display.

### **"Bugging out"**

The risk of collision is high during formation aerobatics; the slightest distraction or unexpected flight path deviation by your or an adjacent aircraft could have disastrous consequences. In such a circumstance, impact may be avoided at the last possible moment by 'bugging out' of the formation; that is, initiating an abrupt departure from the pack.

When station-keeping, 99.9% of one's attention is on the adjacent aircraft, with the residue on a general awareness of where the ground is, which is of increasing importance the lower one is, if a bug out becomes necessary. Our worst case scenario was arguably when inverted in one of the barrel rolls.

For the record, we never experienced even a slight nudge, or a bug-out.

### **The 'Flying Circus'**

In 1971 by my count the RAAF was operating 17 different types of aircraft, almost all of which participated in the country-wide air displays in March/ April, though there were regional variations. For example, with Pearce being the home of 2FTS, Macchi aircraft featured more prominently here than at other locations.

With the plethora of competing aircraft, support aircraft and myriad support crews, the combined package took on the air of a travelling circus: quickly packing up after a show; possibly some celebratory drinks if not moving on immediately to the next location; the huge gaggle in the air; arrival and ferretting around to cajole and beg, steal or borrow whatever necessary to facilitate setting up for the next dress rehearsal; poking fun at others' 'misfortunes'; and so on. Truly a unique experience!

In fact, the 'Circus' could be described as being akin to a huge juggernaut, potentially capable of overwhelming the sensibilities and sensitivities of the host Bases. To assist us, should any frisson eventuate, we had, as our 'impresario' AIRCDRE Bay Adams, a larger than life personality who had flown fighters in WWII and in Korea.

There is a degree of levity in the 'circus' description, but nothing could be further from the truth. The potential for something to go horribly wrong was ever-present, and here I speak for all participants, not just the Deltas. Very fortunately, the only incident I recall was the Canberra that burst a tyre during a short landing demonstration at Richmond (short = coming to a stop as soon as possible after landing).

Now for some entertaining snapshots of events while the Circus did its rounds .....

### **Richmond Dress Rehearsal**

The airshows were 2+ hours duration, with The Deltas being the finale. There was thus the opportunity for us to do our own thing for the first half hour or so, until our sortie briefing. At Richmond the show opener was a box-16 (that is; four box-4s) of Mirages from 76 Sqn, and I found a vantage point above the hangar offices to take in events. I was also able to secure a similar vantage point later, at Canberra.

At Richmond, 76 Sqn duly appeared on time, low, heading south to north. Very impressive. They then gently banked right to head north-east for the transit back to Willy. However, while there was a clear air-mass over Richmond I noted there was menacingly dark low level cloud to the NE. My last tail-end view of the 16 Mirages was of them disappearing into the murk, hugging the terrain. "That could be interesting" I said to myself as I looked the other way for the next event.

While (non-aerobatic) formation flying is second nature to all fighter pilots, there are basically only two close formation positions – echelon and line astern – with the former being the only one employed on occasions where cloud needed to be penetrated; as here the formatting pilot had his best three-dimensional view of the lead, and he had some assistance from formation and navigation lights in low visibility and/or at night. Additionally, cloud penetration was strictly limited to two-ship-only events.

Should the formatting aircraft lose sight of his lead in thick cloud, he would immediately announce it on the radio, then turn away using 20 degrees of bank through 20 degrees of compass heading, and hold this for 20 seconds, then reverting to the original heading. This would place him clear of his leader but in a 'stable' position from which he could quickly regain close formation when visibility improved.

Another reason for echelon being the 'one and only' was that speed brakes were forbidden in line astern for a very good reason: if this aircraft missed a call to select speed brakes out, he would immediately be faced with a very high closure rate on his lead. Thus, formations involving more than two aircraft were made up of various combinations of echelon and line astern, and were strictly fair-weather-only affairs.

Now, getting back to our disappearing box-16 Mirages .....

The weather was closing in rapidly, with a very low cloud base and reducing visibility in showers. The large formation was far too unwieldy to make a U-turn, so the only way was up! In short order the formation entered a very dense cloud and simultaneously 14 aircraft lost contact with each other!

Clearly, the '20/20/20 rule' was not going to work on this occasion. All our intrepid aviators could do was to gently spread out and fervently hope they would not hear or feel metal against metal. Miraculously, all aircraft cleared each other without incident and popped up into clear air at about 15000feet, at which stage the gaggle resembled confetti in an updraft!

The aircraft were now well and truly in controlled airspace without an airways clearance – a 'mortal sin' - but all the Sydney Controller wished for was that they would get off his frequency, and pleaded with them to call Willy Approach!

Only one aircraft in the 16 retained visual contact with his reference aircraft, and that was 'our' boggie Steve Low, who was in echelon right on the overall leader.

### **Canberra Planning Conference**

In the months and weeks leading up to the Displays each host Base held at least one major planning event which would have spawned a host of subsequent lesser meetings. In addition to the display aircraft and their crews there were numerous support aircraft and personnel, and the consideration that tens or hundreds of thousands of spectators would be on base or in close proximity to them 'on the day'. I imagine our representation would have been the team manager Hugh Collits, senior engineering officer SQNLDR Pete Watson, and the equipment officer FLGOFF Garth Buick.

When the discussion came around to airspace management the ATC rep advised that Canberra only controlled the airspace up to 8,000feet and any aircraft needing to go higher would have to call Sydney Control for clearance. This directly impacted our operation as the Mirage takes up to 10,000 feet to execute a 'gentle' 4g loop, and with Canberra's elevation of 2,000feet it meant we would require up to 12,000 feet above sea level.

The ATC rep was adamant. However, once apprised that (a) there were potentially serious pitfalls in changing frequency with such a large formation (b) pilots did not possess a third hand to manipulate the radio control panel and that (c) they would be climbing at 30,000 feet/minute on the upside of the loop and that nothing was going to stop them, the rep then acquiesced that some arrangement would be made with Sydney Control. For the dress rehearsal and on the day the appropriate block of airspace was temporarily transferred to Canberra's control.

If there is a moral to this event, it could be that airspace is managed for the benefit of the end user, NOT vice versa!

### **Canberra Show Opener**

The opening event here was a Vic-5 of our Deltas aircraft (but not the Deltas pilots) led by our 'Spare' pilot FLTLT Jack Smith. Jack's principal task during the Circus was to ferry the spare aircraft around the traps – a spare being wise in case one of our team aircraft went U/S. The Vic-5 took off well before the official start of proceedings and 'held' at an appropriate 'initial point' (IP) in the general vicinity of Lake George until the time Jack had pre-determined was necessary to leave, to arrive overhead bang on time.

In the heat of the moment Jack was a little late leaving the IP. Consequentially, to arrive at the airfield on time the aircraft were considerably in excess of the planned 450 knots (900kph) resulting in a considerable increase in the element of surprise!

The day was perfect: clear skies, no wind, and a comfortable temperature; ideal flying conditions with the air 'as smooth as silk'. I was perched in my lookout above the hangar offices, waiting for events to unfold.

The commentator was telling the crowd that the first event would be the Mirage Vic-5 followed by a swarm of 5 Sqn Iroquois choppers. The Mirages were heading in from the north-east, but all eyes were on the choppers heading in from the south. As the Mirages screamed overhead it appeared to me that the crowd in unison involuntarily jumped about 6 feet into the air, in surprise. Great stuff!

### Edinburgh Dress Rehearsal

All this flying and support effort is thirsty work. It was routine that after all de-briefing was completed most of us (around 100) would repair to the Officers' Mess bar to 'critique' the day's events. On this occasion the bar's shutters were well and truly down and locked as the 'Base Hierarchy' had decided to 'save us from ourselves'!

Initial shock turned to indignation, then rebellion, with cries of 'let's go down to the Sergeants' Mess and see if they will invite us in!' Fortunately our 'top cover' Bay Adams was just as thirsty as the rest of us, and the O's Mess bar soon reverted to normal operations.

### Amberley

An aircraft will create a sonic boom if it attains the speed of sound (Mach 1) in 1g flight. It may also create a boom at a slightly lower speed if under significant g, - due to air accelerating around one or more protuberances in the airframe and subsequently 'cracking the barrier' at this spot on the fuselage or wings.

In 1971 the RAAF was operating loan Phantom F-4E aircraft while awaiting delivery of the delayed F-111. The Phantom was an extremely capable aircraft, but could never be accused of having the sleek and graceful lines of the Mirage. In fact, it was often rather disparagingly referred to as 'being a triumph of thrust over aerodynamics'.

On one practice the Phantom solo came screaming in at 'only' Mach 0.9 and entered a high-g level turn. This produced a very pronounced WHUMP that was heard and felt by all, being only a 'gnats whisker' below a fully developed sonic boom and the likelihood of broken windows, etc, etc. He was a little less enthusiastic on subsequent occasions!

### "Bomb burst .... GO"



Deltas executing their classic horizontal "Bomb-burst". [via Alf Allen].

In close multi-formations all configuration changes are called by the leader on the radio. First the forthcoming action is nominated, then a slight pause of about one second, then the imperative "GO" to ensure everyone actions the change simultaneously.

The final manoeuvre by the 5-ship was a bomb burst from Vic while heading towards the crowd. Delta 1 pulled straight up into a loop, Deltas 2 & 3 rolled away to 40 degrees of bank then pulled into big wingovers, while I and Delta 5 rolled away to 85 degrees of bank and then pulled into a level 4.5g turn.

Nick and I, being all too aware that Deltas 2 & 3 respectively would be rapidly rolling towards us, developed the habit of initiating our individual rolls away on the 'ST' in 'Bomb burst'; the logic being that it would take us about a second to achieve our desired bank angle, at which stage Delta 1 would issue the imperative "GO".

This worked a treat except for the time when Bruce Grayson, instead of calling "GO", said 'Standby', as he wished to delay the action momentarily. Thus, there were Deltas 1, 2 & 3 with wings level and Nick and I with 85 degrees bank, in suspended animation defying the laws of aerodynamics until we got the go-ahead to start pulling into the turn.

### **Five weeks, with a 'preview'**

The Deltas were created for the seven country-wide Golden Jubilee air displays 28 Mar 71 to 25 Apr 71, but we had a 'curtain raiser' of the definitive sequence at the RAAF Academy Graduation ceremony at Point Cook on 09DEC70.

In a previous article written by Dave Robson, he had mentioned the 40 knots crosswind when we took off at Avalon (Pt. Cook runway being way too short for the Mirage), but he failed to mention the 45 knots when we returned for landing – the Flight Manual limits being 22 and 25 knots respectively!

For our take-off in such conditions we dispensed with the usual configurations and rolled individually with five second spacing, which afforded us more leeway with our control inputs in unfamiliar conditions.

The Mirage had a landing speed of 175 knots (350 km/h) so was fitted with a brake parachute to reduce brake wear and reduce the landing distance. There was an immediate 20 knots reduction when the 'chute was first deployed, followed by a more gradual retardation. Standard practice was to edge towards the exit side of the runway where the chute was released, upon which it dropped limply onto the runway and was collected by a Chute Recovery Team after all aircraft in the package had landed.

The 45 knots crosswind was a real consideration as the aircraft tended to 'weathercock into wind' when the chute was deployed, as the aircraft's nose wheel was still in the air at this stage. We were thus briefed to release the 'chute immediately after the first jolt of retardation, even though we would, individually, still be on the runway centreline. However, there was absolutely no chance of the 'chute then falling limply onto the centreline where it may foul the next aircraft in the landing sequence!

The howling westerly wind at Point Cook generated lots of mechanical air turbulence which made for a very difficult air display, but I don't recall any complaints once we had 'put the aircraft to bed' at Avalon and joined the celebrations at Point Cook.

This Display was the 'crowning glory' of my time as a PLTOFF. I was promoted to the heady rank of FLGOFF four days later, December 13<sup>th</sup>, being the second anniversary of the graduation of No. 67 Pilots' Course at Pearce.

### **Epilogue**

All in all, counting all the practices, transits and displays, I have 126 logbook entries directly attributable to The Deltas. Multiply this by seven, and a 1.1 hour average sortie length, and that's just short of 1000 hours – and we were but one element of the Golden Jubilee 'Circus'. I believe I can unequivocally state that never before had the RAAF devoted so much effort to a single series of airshows, and never again will it!

### **Addendum**

#### **Turbulence**

At high altitudes aircraft often go for long periods without experiencing any turbulence, because they are flying in a stable airmass. Down close to the ground the air is often still and smooth in early morning, but by 'airshow time' mid-afternoon mechanical and/or heat turbulence is usually evident. Surprisingly, even though only a few feet separate aircraft in close formation, they will invariably respond differently to an encounter with the same 'lump' of turbulence.

Thus, each and every member of a formation team is continuously making small control inputs to counter the effects of turbulence – as an 'overlay' to basic station-keeping requirements.

### Station –keeping technique

Aircraft flying directly off the leader have, relatively speaking, a simpler task to perform than those further out. Thus, in our 'simplest' formation, the Vic-5, Deltas 2 & 3 have it easier than Deltas 4 & 5. Right? Wrong! Deltas 2 & 3 need to exercise super-refined judgment to maintain their positions using tempered control inputs, cognisant that Deltas 4 & 5 are positioning on them. The latter, on the other hand, can be relatively care-free with their control inputs as they do not have these responsibilities.

A 'daisy-chain' formation, such as our Echelon-5, requires an additional consideration. If an error develops and is continued 'down the line' there is the possibility for a 'whip' or a 'surge' to develop. 'Looking through' your reference aircraft to the next in the line can contain this. That is, #3 would 'look through' #2 to #1, #4 'looks through' #3 to #2, and so on.



**Vic-5 with Solo 1 in the slot, and Solo 2 executing a cross-over.** [via Alf Allen].



**Deltas practising at Williamtown, February, 1971.** [Wolodymir Nelowkin via ADF-Serials Gallery].



**Deltas Solos Cross-Over, Williamtown, February, 1971.** [*via Dave Robson*].



**A3-66 at RAAF Pearce, 1971.** [*Kurt Finger via ADF-Serials Gallery*].



**The Team.** Back row, left to right: FLTLT Jack Smith (Spare), FLGOFF Garth Buick (EquipO), WGCNDR Bill Simmonds (CO 77SQN and Solo 1), FLTLT Dave Robson (Solo 2), SQNLDR Hugh Collits (Team Manager), SQNLDR Pete Watson (EngO). Front row, left to right: FLTLT Nick Ford (Delta 5), FLTLT John Archer (Delta 2), SQNLDR Bruce Grayson (Delta Lead), FLGOFF Chris Mirow (Delta 3) and FLGOFF Alf Allen (Delta 4). The back-drop is USAF F-111A, 67-0091/NC. [Dave Robson].



**Some of the Deltas, 1971.** [via ADF-Serials Gallery].

## A3-19 – A 77SQN ‘DELTA’

**A3-19** was Delta ‘Solo 1’ and, with **A3-15** ‘Solo 2’, had light undersides (the first in low-sheen camouflage), which distinguished them from the darker 5-ship. A3-19 had WGCDR pennant on fin, and all carried 110-gall (600L) tanks.

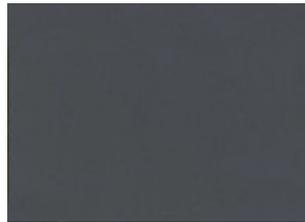


[adf-serials]

**A3-19** at Canberra APR 1971 for the 50th Anniversary airshows by which stage (above) the pilot’s name was under the cockpit



**BS381C-298 Olive Drab**



**BS381C-640 Extra Dark Sea Grey**



**FS595B 26440 Light Gull Gray<sup>140</sup>**



The 18” diameter kangaroo roundel was carried on both sides of the fuselage<sup>141</sup> and on wing undersides, not on the upper surfaces. Note that it has a slight tail down attitude.



The fin flash was the raked style 18” x 15” parallel to the leading edge of the rudder, introduced to the Mirage in JUL 1966.<sup>142</sup> It was inclined at 35° from vertical<sup>143</sup> – later adopted too by Sabres and Macchis.



The ‘grumpy monkey’ was marked in a shield on the nose of Delta aircraft, while ‘77’ was in a shield in fin stripes. From 1972 the ‘grumpy monkey’ was marked as the 77SQN fin marking.<sup>144</sup>

**The Delta aircraft over 1970-71 were:**

‘Delta Lead’ SQNLDR Bruce Grayson A3-66

‘Delta 2’ FLTLT John Archer A3-75

‘Delta 3’ FLGOFF Chris Mirow A3-29

‘Delta 4’ FLGOFF Alf Allen A3-39

‘Delta 5’ FLTLT Nick Ford A3-78

‘Solo 1’ WGCDR Bill Simmonds A3-19    ‘Solo 2’ FLTLT Dave Robson A3-15

It appears A3-17 was flown to the various bases by the **Spare** pilot, FLTLT Jack Smith.

## .... FIFTY YEARS ON

**Fifty years on**, with the flying team 'intact', the decision was made to gather for a reunion. Unfortunately, neither the Team Manager SQNLDR Hugh Collits, the Senior Engineering Officer SQNLDR Pete Watson, nor the Equipment Officer FLGOFF Garth Buick, could be located.

A Gold Coast venue in close proximity to The Boss's retirement village and the RAAF's centenary date of 31MAR21 were chosen, and spirits were high. Then Brisbane and South East Queensland went into a five-day COVID lockdown and thwarted our plans.

Shortly thereafter, Team Lead Bruce Grayson succumbed to a long-standing illness.

This really knocked the wind out of our sails. Nevertheless, we 'regrouped' by email with a new attempt to gather, this time at our spiritual home, RAAF Williamtown, in mid-July.

### **About the Author**

Alf Allen joined the RAAF in 1967 on 67 Pilot's Course, and on graduation from Pearce was posted to Williamtown to become a fighter pilot. First flying fighter lead-in on Sabres, Alf was soon on No. 15 Mirage Course over early 1970, and was posted to 77 Squadron and selected to fly with the 'Deltas', while still a PLTOFF. Commencing the formation workups in late 1970, by early in the new year the team were flying full dress rehearsals in earnest as part of the "airshow circus" at the various bases, and then the shows during March and April. He was posted to 75 Squadron Butterworth in April 1972 where that July he had to leave A3-63 with a fire on the runway. He was posted back to 77 Squadron in April 1974 and a few months later was selected to be Air Force Aide de Camp to Governor General Sir John Kerr. He was in that post for 'The Dismissal' on 11 November 1975. Then followed the QFI course at CFS and a posting to Pearce to instruct on the Macchi with 2FTS. In the 1977 airshow season (to celebrate HM The Queen's Silver Jubilee) he flew as part of the coordinated Macchi pair. By 1980 Alf was in UK as a SQNLDR to undertake the year-long GD AeroSystems Course, and then remained on staff for two years. Back flying in 1983, he was the Chief Flying Instructor at 1FTS Point Cook. Next he was Director of Aircrew Publications-AF in Melbourne, and finally a Staff Officer at Headquarters Integrated Air Defence System in Butterworth. Alf retired as a WGCDR in 1989 to pursue civil flying in Perth, where he still lives.



**The author in his finery.** [Alf Allen].



**Author's Mirage being towed at Fairbairn, 03APR71. [Alan Flett].**



**Author heading out for a display at Fairbairn, 03APR71. [Alan Flett].**



**A3-75 taxiing out at Fairbairn, 03APR71. Interestingly, it is fitted with the Reconnaissance Nose. [Alan Flett].**



**WGCDR Simmonds aircraft being pushed back into its parking position at RAAF Fairbairn, 03APR71. [Alan Flett].**



**A3-39 (left) and A3-29 (right) being refuelled at RAAF Richmond, 04APR71. [Alan Flett].**



**The spare at RAAF Fairbairn, 03APR71. [Alan Flett].**



**A3-66 on the ground at Tullamarine, 18APR71, with the spare A3-17. [RAAF image 00-142-708 via ADF-Serials Gallery].**

# A Moment in Time Memories from my Service

## *“Classified Waste”*

Shep

At ASAFCOMMEN Williamtown we had a great big shredder which we used to destroy all of our paper waste. It was a very large, very expensive piece of kit which had all sorts of blades to turn vast quantities of paper products into very, very tiny bit-lets of paper products. Nothing at all like normal civilian home shredders which merely cut a page into ten or twelve not very narrow page length ribbons or civilian office shredders which would turn the same page into slightly narrower and shorter ribbons. Someone with an interest in rummaging through bins and trying to reconstruct a page from that debris wouldn't even be particularly challenged if faced with a waste paper basket full of that stuff. Sure, if it was from the office shredder, they might have to bring a snack and a flask of their favourite hot beverage, but they'd still be able to get the job done without too many problems. No, the shredder we had turned paper into such tiny, little strips which were so fine, one had to be careful about breathing the stuff in. And, it'd do lots-n-lots of pages at once.

At regular intervals around the traffic hall we used to have little trolley-like contraptions. Try and visualise something that has a four-wheeled base in an X sort of configuration (a bit like an office wheely chair), upon which a flat, narrow, stainless steel, vertical bar is mounted. This bar supporting a circular “hoop” at the top with a lever-handled clamp. The whole thing being maybe 1200mm or so tall. The purpose of these things was to hold large, paper, “classified waste” bags. One'd stuff a new bag down through the top of the hoop, reach in and knock the bag open and then expand the top of the bag out and around the hoop to then be locked in place by the clamp. Throughout a shift all sorts of COMMEN type waste would be chucked into a convenient waste bag. When a bag was full, whomsoever filled the last of it was supposed to be a responsible COMMSOP and remove said bag from its holder, fold the top over and staple it closed, throw the full bag into the store room (for night shifts future attention) and replace it with a nice new bag. Naturally by the time night shift showed up, the traffic hall was littered with bags in their trolleys, scattered about, overflowing (to the floor) with tape and paper and such.

We only had two on a shift when I was there and the way we used to do it on night shift was, after the receive circuit had finally quietened down and we'd processed all of the incoming traffic, one of us would be released to go and have a kip (maybe in the smoko room but typically in the store room which was inside the COMMEN) whilst the other held the fort – kept on top of any incoming or outgoing traffic, did all the domestic type chores like replacing all of the tape in each of the KTRs and the transmit and receive banks, replacing all of the paper rolls in the printers, making sure all of the red penning was up to date, put new log sheets out, do the shredding and, finally, vacuum the floors. The vacuuming of the floors was done last. That was for two reasons, one because doing the shredding made a bit of a localised mess and two, to keep the noise down whilst your shift partner had a snooze.

When one's shift partner decided that they might go and have a lie down, the other would go into the store room and remove all of the full classified waste bags out into the traffic hall to some convenient spot near the shredder. As the small hours of the morning plodded on towards the end of the shift and, at an appropriate time to allow yourself to get the shredding and the vacuuming done and, having nothing better to do, say 4 am or so (we handed over to day shift at 7), you turned the shredder on, “hhummmmmmmmm”, and started feeding it the contents of the bags – hand-full by hand-full, bag by bag.

Now, from time to time, foreign objects would end up in the classified waste bags. Staples were the most obvious and common. I don't recall now if we were supposed to remove them, but I do know that there came a time, since these things weren't an issue for this machine, that we didn't worry about it and would merrily jam a 10 or 15-page document which still had the staple(s) imbedded in it into the jaws of this machine and, “Veeerrrrrrraaw” it'd be gone. Every now and again some larger, non-paper, objects would be detected by the alert and diligent COMMSOP. These would be removed and set aside. Some of the things that you'd have to separate from the stuff to be shredded! Screws,

bolts, binders (including the rings)... But sometimes you wouldn't be aware of the non-compliant thing until you saw a glimmer of it just as it vanished into the teeth of this black-hole of a contraption, "Veeerrrrrrrrawrawrawraaaaw"!

Scooping out handfuls of paper and documents and such from a big paper bags and applying said handfuls to the mouth of this machine was a repetitive and tiresome task. Usually, when you got towards the end of the bag, you'd just up-end it and, contents gone, feed the now empty bag into the shredder. And on you'd go, bag after bag after bag. You might have 20 bags to shred on a typical night shift, you might have more.

I suppose I'd been on shift for 12 months or 18-months or so (not continuously, I got weekends off most of the time!) and had taken my turn at the shredder many, many times and had destroyed 10's of thousands of bags of classified waste when, one night ... well, I happened to be on night shift on the last night that this huge shredder was in operation.

My shift partner had decided to go and have a nanna-nap and I set about doing the domestics. The night wore on and it came time to do the shredding (sigh). I turned the shredder on and started feeding it the contents of the bags – handful by handful, bag by bag; up-end the last fifth of a bag and then shred the bag and on and on. I was about half way through my pile of bags and, by this time it was handful by handful, bag by bag; up-end the last third of a bag, etc., when having up-ended this particular bag, I became aware that, as the contents slid out of the bag and into the teeth of the shredder, that the bag suddenly became a lot lighter!

In a circumstance like that, one has a recollection of the continuance of mundane chore, broken by a momentary confusion as the thing that your upending suddenly changes in weight and balance as something, which has no business being as heavy as it is, is sliding out of the bag. That confusion is interwoven with an awareness of the inevitability of impending disaster that begins to glimmer into brightness to the commentary of one's own internal monologue of, "uh-oh ..." but throughout, one seems to be a spectator; intimately involved yet somehow detached. One could almost imagine one's own subconscious now taking a morbid interest – stopping to keenly watch whilst undoubtedly saying, "this'll be interesting ...". All of this in the space of some small fraction of a second.

This time, there was no comforting audible confirmation that this beast of a shredder was able to devour the proffered contents of the bag as it routinely and, hitherto, mundanely, had. There wasn't even the evidence of (very) slight difficulty with the signature, "Veeerrrrrrrrawrawrawraaaaw" sound. This time, the shredder uttered its last "words", "Veerrr" then a pause then, "CLASH-SMASH-CRUNCH-SCREECH-CLASH-SMASH...".

Oops.

At least I had the presence of mind to turn the machine off. I peered into the feed chute. A large, rectangular, metal object was jammed in amongst the now horribly smashed teeth of the two upper-most shredding drums. Shards of splintered metal and teeth glistening in the fluorescent light. Due to the obvious damage, I could now easily see that there had been other banks of shredding drums beneath. I'm no shredder technician – but even I could see that the damage wasn't repairable.

This was worse than muttering under my breath within earshot of a fearsome WOFF ADG. This was worse than thinking that ANZAC Day was *next* week and sleeping in. This was even worse than committing the crime of being responsible for a UD. And this was *FAR* worse than sauntering along during a parade march-past. This was going to cost me.

How was I to know that some grubby Telstech had carelessly chucked a lump of machinery into a waste bag as he walked through the traffic hall (no doubt mid-shift) having decided that he'd had enough and was going home for the rest of the day? Well, I suppose I could have either, a) checked for unsuitable objects or, b) not been up-ending the bags at such a rate that I couldn't stop foreign material from being thrown into the mouth of the shredder. But, really! It was the internal mechanism of a KTR! It'd be a bit like your local motor mechanic chucking an engine block into your recycling wheelie bin!

The destruction of classified waste is of critical importance. It's not like covid-19 saturated bed linen, you can't just stuff it into a skip bin in a public laneway. So, a decision had to be made.

It had been decided, probably within the rarefied corridors of a concrete office block in some suitably cold, dismal place, by high ranking superiors upon whom the burden of decision making at a national level had been entrusted, that the cost to longevity ratio was likely to be sub-optimal if the scenario whereby ... and the implementation of appropriate risk management strategies ... mitigate against a recurrence ... financially outrageous proposition ... after suitable consultation with government ... (yawn). Or, the OIC thought it'd all become too hard, so we'll just take the waste to BHP where it can be vaporised. Which is what we thereafter did.

Once a week, we'd load up the COMMCEN mini-bus with full classified waste bags. We'd stuff the van to its absolute voluminous capacity (leaving barely enough room for a driver and offsider to squeeze into the front) and off we'd trundle on a merry jaunt the 20 or so km's to the BHP Steelworks.

There was a particular furnace that we took the waste to and it was one or two stories up off the ground at the (I suppose) lower end of a huge, long, rotating drum like tube (I can't remember now what its purpose was). Anyway, one BHP employee was required to stay, one of us RAAFies would go upstairs with him to make sure that he didn't try and open any of the bags (because of the obvious risk that he'd perhaps learn how much tomato sauce the officer's mess was going through) and one would stay down at the van. A rope net was lowered and the COMMSOP down at the van would load it with classified waste bags and secure the net. The BHP chappie would operate the winch and lift the rope net up to the level of the furnace and the COMMSOP with him would supervise the BHP bloke, bag by bag, as he opened the door to the furnace, tossed a bag in and quickly closed the door. This door had a window in it and it was amazing to see, through this window, the bag get vaporised before it hit the floor of the furnace.

It was pretty warm, but far better than spending 45 minutes in the small hours of the morning shredding stuff.

At the time, I was sure that this little episode was going to cost me. Well, I don't think that its merely selective memory when I say that I don't recall actually getting into trouble for destroying a very, very expensive piece of RAAF equipment. COMMSOP life at Williamtown went on pretty much as normal, except that now (depending on what shift one was on) we got a jolly into BHP a few times a month to watch someone else destroy our classified waste ...

Dodged another one ... !



## Curtiss Corner:

# P-40E identifying gone wrong and confirming A29-64 by radio signals

Gordon Birkett@2021



Some time, long ago in a P-40E Supplementary article, I stated from examining this below picture that 2<sup>nd</sup> Lt Robert McMahon's 33<sup>rd</sup> Pursuit Squadron (Provisional) P-40E "Bahootee the Cootee" No II that was forced landed on 17 February 1942 at Darwin RAAF Station was USAAF FY41-5376 #22 based on the Curtiss Wright (CW) Customer Sequence Number (CW#) stamped on Station #5, being viewed as CW#396.

A recap on CW#s. There were only three production runs: one for USAAF P-40D/Es; one for British Purchasing Commission RAF Kittyhawk Mk.1/Mk.1a, and a follow-on Lend Lease contract for a further 1500 P-40E-1s. All were assigned sequence numbers on the production line for identification; before assignment of customer serials, with the original British direct buy Contract (Gold Bullion) for Kittyhawk Mk.1s, AK570 to AL230, being stamped Curtiss Wright Sequence numbers "1 to 560". The USAAF P-40D/E Curtiss Wright Sequence numbers were from "CW#1" to "CW#843", whereupon then the follow-on P-40E-1/Kittyhawk Mk.1a commenced from ET100 "CW#561" continuing to EV699 "CW#2060".



Pictured at Darwin RAAF Base in March 1942, Bahootee the Cootee No II. [Author's Buz Collection].

Initially grainy shots we determined it could be only one of the following CW# possibilities of those arrived in Australia:

- CW#246
- CW#286
- CW#296
- CW#386
- CW#396
- CW#546
- CW#586
- CW#596

After careful checking, the corresponding USAAF Fiscal Year Serials and their delivery dates, the list shrunk down to two and then with a hi-res photo it was discussed and agreed upon as the second in the list:

- CW#386 xyz 5/11/41 Project X 15/1/42 off LEFT 31/10/44 Source USAAF IRC
- CW#396 xyz DAR-42-143 7/11/41 Project X 21/1/42 "X" off LEFT 31/10/44 Source USAAF IRC
- Note "LEFT" is theatre code for 5thAAF.

How was the list shrunk?

By eliminating the airframes through a reconciliation of all P-40E/E-1s received in Australia and all others (843 x P-40D/Es and 1500 x P-40E-1s built). That said, the results of those discounted are as follows:

- CW#246 in the USA and was wrecked in taxi accident Eglin AAF, FL 21 March 1942. Source USAAF IRC
- CW#286 delivered to Philippines 25 November ,1941 to 21st PS. Source USAAF IRC
- CW#296 Defence Aid XYZ /USSR one of the Moscow Protocol P-40Es, shipped Nov 1941 Source USAAF IRC
- CW#546 (41-5526) was identified by CW Plate as FY 41-5526 c/n16518 & V-1710-39 Eng# 41-36209 (Allison #5842) which crashed 10<sup>th</sup> March 1942, at a location 10 miles NNW of Walhalla Victoria. That aircraft was part of 23 P-40Es delivered on 22 February 1942 at Geelong. Therefore, date wise by location was not in Australia on the day of the accident and flying was post a 17 February 1942 Crash.



**Curtiss Wright Data Plate from McLaughlin's P-40E aircraft.** [Author's Hanning Collection].

- CW#586 (41-5566) was one of 37 crated P-40E/E-1s transhipped from the Phoenix Convoy at Geelong (12/02/1942) for Convoy MS-5 to Java on the SS Sea Witch.
- CW#596 (41-5576) was identified as flown by Lt Chester Namola, 8<sup>th</sup> PS then based at Canberra ACT when on 28 March 1942 he became lost. Later as #53, 2nd Lt Donald Morse 8<sup>th</sup> FS crashed landed at Strauss Field NT on 24 August 1942.

23/3/42 FORMATION OF 4 AIRCRAFT, P/40s with U.S.A. PILOTS - became lost in fog & forced landed in EDEN district.

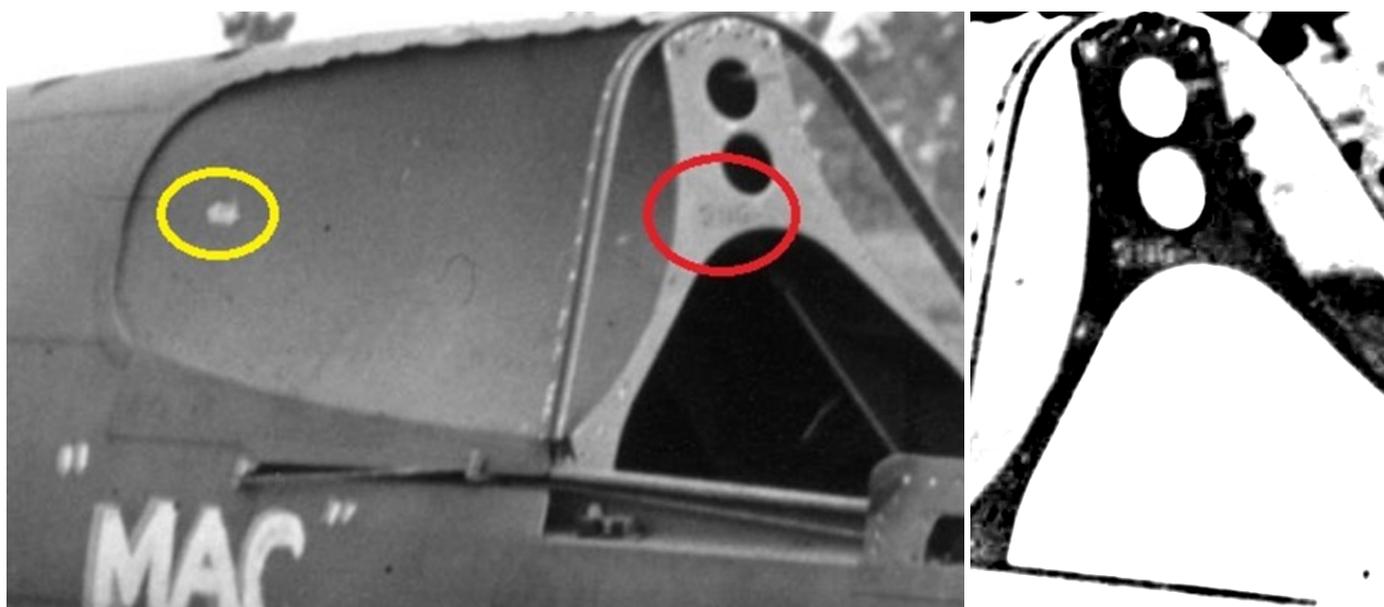
AIRCRAFT	PILOT	LOCATION	INJURY SUSTAINED.
P/40 E 41-5455	Lt. FIELDER	EDEN	NIL
" 41-5576	Lt. NAMOLA	BEREDAT	NIL
" 41-5602	Lt. TAKALA	TOWANEA	KILLED
" 41-5559	Lt. MUSIAL	NARRABARBA	KILLED

Excerpt Canberra RAAF Station A50 Sheet Page 327, Namola's aircraft. [NAA A9186 Control Symbol 200].

By a consensus by four researchers, including myself admittedly, it was nearer to represent it as CW#396 by closer examination of the original photo per red circle below due to second number looking more like an "9" rather than a "8" due to the shadow effect of light and depth of stamping, along with bold lower nine curl end in the red circled area.

Remember these were hand stamped with single dies without an easel by hammer to a rough line. The first number looked more like a squashed "5" but is in fact a "3" with a dint/score at the edge of the upper three as seen in polarised shot, right.

The Yellow Circle on the scallop area below is where the Factory applied Plate with the true Customer # stamped on it; a standard location for all P-40E/E-1s. *If only that was clear sighted.*



Original blow up of Station 5 that looked like 546 and original picture. [Author's Buz Collection].

That left P-40E "Bahootee the Cootee No II" as being considered stamped as "396" aka CW#396 aka FY 41-5376.

My, *I saw the light*, and now new counter argument is that there is a vertical blank divide through the stamping which suggests a "8", rather than a "9" and it would now suggest therefore that it is CW#386.

Buz also had a real counter argument for himself, that eclipsed all known documentations. The significance? Buz has confirmed that CW#396 ended up being loaded on the USS Langley after arriving at Maylands Airport on 18 February 1942 from a recent obtained USAF AHRA Microfilm in the last few weeks.

On the following page, though the balance of 31 P-40E Serials/CW#'s is redacted (such Bastard P-40 Mafia people that we are), due to ongoing research by both Buz and I we have however left P-40E CW#396 showing and a few of the 13<sup>th</sup> /33<sup>rd</sup> PS(Prov) Pilots.

McIntosh D.O. 0-427451 Wallace R.W. 0-430003 Dix G.J. 0-427476  
 Ackerman W.P. 0-429897. Wagner Bruce and Hubbard returning as  
 per instructions. Thirtytwo airplanes listed below all in  
 commission. Army serial number of airplanes available to be  
 loaded are as follows: P-40's - E 41- [REDACTED] 41- [REDACTED] 41- [REDACTED]  
 41- [REDACTED] 41- [REDACTED] 41- [REDACTED] 41- [REDACTED] 41- [REDACTED] The following  
 listed airplanes have no army serial number but the Curtis  
 airplane numbers are as follows: [REDACTED] **396**  
 [REDACTED]  
 [REDACTED] MANN.  
 IMPORTANT. SECRET EXAMINED ACTION COPY.

The New Microfilm showed a Communications to HQ USAFIA Melbourne. Excerpt above. [Author's Buz Collection].

How has this anything thing to do with the RAAF? Nothing really, except if you think our original aircraft in this article was CW#386 aka FY 41-5366.

The prospective argument was that A29-64 was 41/386! Meaning that it was a FY41 aircraft with a CW# of "386"

RECORD CARD—AIRFRAMES, AERO ENGINES, MECHANICAL TRANSPORT AND MARINE CRAFT.				R.A.A.F. Form E/E.88. (June, 1938)	
Type	KITTY HAWK	No.	A29-64	Chassis Airframe } Fitted	ALLISON
Order No.	LATE 41/386			Engine }	No.
Received from				Date Received	

Per E/E-88s extracts per A29-64. Error was in the presumption of FY41 rather FY40. [Author's Buz Collection].

But we can now confirm that A29-64 is indeed P-40E FY40-386 not 41-386 (FY41 with CW#386) as marked on the E/E-88 Card.<sup>145</sup> But then we would say that's circumstantial?

Ordinarily this entry on a E/E-88 as 41/386 would have indicated that it would mean it's a CW# not a USAAF serial as everyone knows (sic) and that FY41-386 was a North American AT-6A-NA Texan within the 41-149 to 41-665 FY41 Serial block.

So, it's not, but we know that CW#386 (FY41-5366) was a P-40E which also ended up in Australia as part of Project X.

Was it left there by the USAAF when others were loaded? No, we have now further evidence offered per the following USAFIA Radio Signal excerpt dated 18 March 1942 ex USAFIA Perth (Maylands Detachment), which confirms it serial as being a FY40 aircraft from those unloaded from a recently arrived ship.

There is also the seemingly slight issue as to why P-40E 41-5742 was not quoted in the original group of 19 P-40Es as delivered off the SS Robert Tuxworth as per the next page?

I can't answer that, other than it was indeed left out by accident. I should note that they also stated the ship was named the SS Sea Witch, rather than the factual SS Robin Tuxworth. Another error of the time, for the ship did not arrive, ex Java at Freemantle until 22 March 1942 after unloading all 27 crated P-40E/E-1 at Tijilajap Java on 27 February 1942.

DELIVERED TO REAP HPRK. 41-5738, 41-13527, 41-5744, 41-5736,  
 41-13522, 41-13524, 41-5741, 41-13525, 41-5739, 41-5740, 41-5734,  
 41-13521, 41-5737, 41-13528, **40-386**, 41-5743, 41-5735, 41-13526.

<b>Robin Tuxford</b>	3-1-42	Freemantle	<b>TYPE &amp; WEIGHTING</b>	14
Horace Luckenbach	3-8-42	MELBOURNE	WILL BE DELIVERED TO THE PAC & LOCATED IN B.P.C.	

Excerpt above of shipping details per USAFIA Radio Signal 18/02/42: Per E/E88's we can confirm 17 of 18 serials quoted per range A29-49 to A29-53/A29-55 to A29-63 and A29-65 to A29-67 delivered by 18/03/42. Missing is 41-5742. [Author's Buz and my personal Microfilm Collection].

Per the E/E-88 Card for **A29-54**, ex FY**41-5742** is clearly displayed and that the USAAF IRC (Individual Record Card) of 41-5742 also matches the same shipping details as of the other 18 P-40Es delivered.

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

Type	KITTY HAWK	No.	A29-54	Chassis	} Fitted ALLISON	No.	
Order No.	LATE 41/5742			Airframe			
Received from				Engine			
				Date Received			

Per E/E-88s extracts per A29-64. [Author's Buz Collection].

Ah, but on top of that, we now have a second USAF AHRA microfilm document source per **A29-54/41-5742** in red highlight box, which also as a second source includes **A29-64/40-386** in the orange highlight box.

41-13528	✓
40-386	✓
41-5742	✓
41-13526	✓
41-5742	✓

Both serials quoted were listed in a written ledger by the USAFIA April 1942 for those in Western Australia. We can confirm **A29-54**, was ex **41-5742**, This second source confirms our missing **A29-64** as being **40-386**. [Author's Buz Microfilm Collection].

Back to CW#386; a history recap of 2nd Lt Robert 'Bob' McMahon and his 33<sup>rd</sup> Pursuit Squadron (Provisional) P-40Es

A side issue, the quoting of the Box Number "22" may be erroneous to this aircraft in question for we know that 2nd Lt Robert 'Bob' McMahon P-40E on the day of the Darwin Air Raid, when flying his third P-40E, which was recorded as #22. Post war he stated it was named "Bahootee the Cootee No III". So, the original picture is not #22.

He also stated that his first allotted P-40E was **41-5421 #29**, but someone had 'wrecked' it during training at Amberley.

Given that this aircraft had a landing accident at Amberley on 3 February 1942 with 2nd Lt Edward Miller O-428517 at the controls, it would seem he flew at least four aircraft during this four-week period, with only three named *Bahootee the Cootee*.



**Pictured at Amberley RAAF Base in late January 1942, is McMahon's original P-40E #29. [Author's McMahon Collection].**

His story of flying several different P-40Es continued after take-off from Daly Waters on 15 February 1942, when he struck a parked RAAF tractor, with his P-40E on take-off. He continued to Darwin RAAF Station and on landing there, the undercarriage collapse.

While the flight spent the next three days getting their P-40Es serviced and ready, McMahon needed replacement P-40E. He found one of a very few unserviceable P-40Es (no more than 3-4) left by the 17<sup>th</sup>, 20<sup>th</sup>, and 3<sup>rd</sup> PS (Provisional) available. He and the USAFIA Base Section one ground staff effected repairs to one of those left behind.

This became "Bahootee the Cootie No II" following repairs but was later damaged on landing following its test flight on landing at RAAF Darwin on 17 February 1942. This is the aircraft in question originally and is now identified as CW#386/41-5366.

Memories of Bob McMahon and others suggested that one of the hangered aircraft had a belly Fuel tank feed problem and its pilot, 2<sup>nd</sup> Lt Eugene Wahl had swapped for another squadron's pilot's aircraft.

The aircraft swapped was originally thought to be piloted by 2nd Lt Robert Kiser 3rd PS (Provisional), who was there at Darwin on 10 February 1942 with the squadron.

Now without an aircraft, he returned to Amberley by air and was eventually assigned to the 7<sup>th</sup> PS of the 49<sup>th</sup> Pursuit Group and assigned with P-40E #184 on arrival. On the day of the first Darwin Raid, 19 February 1942, McMahon managed to get airborne and stayed low and fast. He witnessed a low opening chute, which for all intents and purposes had to be Pell. He turned south near Lee Point, some seven miles north of the strip.

There at 200-300ft he ran down via East Point, Fannie Bay to Darwin Harbour along the coast (witnessed by members of the 14th Anti-Aircraft Battalion 2nd AIF).

He flew over the ships in the harbour at mast height, including the USS Peary (1190 Tons) and the SS Zealandia (6682 Tons). He then climbed to engage a Kate that had just finished its bomb run. The return fire from the Kate and the unnoticed fire from a Zero caused damage to his hydraulics. His landing gear dropped down and the resultant drag left him in a precarious position. McMahon stated that he was not aware that he had not clipped his sash belt on.



Pictured at Darwin RAAF Station on 10<sup>th</sup> February 1942, is P-40E #22. [Author's Bill Bartsch Collection].

When the undercarriage dropped, he slid forward into his gunsight. The Zero's fire eventually caused his engine to fail and burn; with the drag and the damage done by the Zero, it was time to get out. McMahon abandoned his P-40E between 1500-2000 ft and parachuted to safety with slight injuries. His aircraft crashed near Waterlily Creek, southwest of Darwin and that P-40E, #22 Bahootee the Cootee No III, has not been seen since. McMahon after being evacuated to South Australia soon afterwards, and went on to fly Bell Airacobra aircraft with the 35<sup>th</sup> Fighter Group and would survive the war and lived into the 2000's.

I know of one of our diehard members of our P-40 Mafia researchers has been going "out there" on a Quad Bike over the last two decades looking for it, but as of today, Johnno still seeks this holy grail. Once found, maybe we can get that true USAAF Serial/CW# for #22!

	Simpson, Clarence S. Jr. +Langley	2nd Lt	O-704515	14th Pursuit Gp
+196	Knebel, Bernath L. +Langley	2nd Lt	O-621117	15th Pursuit Gp
+36	Glover, John J. +At No. 1	2nd Lt	O-327406	34th Pursuit Gp
+28	Yaught, Robert E. +At No. 1	2nd Lt	O-182764	14th Pursuit Gp
+22	McMahon, Robert F. +At No. 1	2nd Lt	O-427453	21st Pursuit Sq
	<del>McMahon, Robert F. +At No. 1</del>	2nd Lt	O-427453	21st Pursuit Sq
+138	Letane, David E. +At Alice Springs	2nd Lt	O-427453	21st Pursuit Sq
+15	Buhr, Richard E. +At No. 1 wrecked	2nd Lt	O-428532	
	Dix, Gerald J. +Langley	2nd Lt	O-4276757	15th Pursuit Gp
			O-4274767	

Summary was made of their tail/box numbers of the 33<sup>rd</sup> PS(Prov) lost, and there is P-40E #22 as the aircraft on the day. [Author's Collection].

So, in summary, we know P-40E CW#386 never went on the USS Langley and that P-40E 40-386 is A29-64.



A torpedo hitting and exploding against the USS Langley. Later sinking with P-40E CW#396 and 31 others. [Author's Collection].



Lt Robert "Bob" McMahon later in October 1942 in Townsville. [Author's Collection].



## Sources

ADF-Telegraph and prior ADF Serials Newsletter Articles: P-40 In RAAF Service Pt1 to Pt 14 GRB.  
Innumerable USAF AHRA Microfilm Reels on Far East Air Forces/ 5thAAF 1941 – 1942  
Curtiss Wright Buffalo Customer Ledger 1941-1942 (Buz Held)  
"Every day a nightmare" ISBN-10:1-60344-176-X William H Bartsch @2010

# End Notes

## RAAF WWII in Colour, No.12 – RAAF Wapitis

- <sup>1</sup> J Bennett, *The Imperial Gift*, Banner Books, Maryborough, 1996, p.29.
- <sup>2</sup> Air Board Agenda No. 1368 of 29 JAN 1930, approved by the Minister for Defence on 4 FEB 1930.
- <sup>3</sup> [ADF Serials - Bristol Bulldog \(adf-serials.com.au\)](http://adf-serials.com.au)
- <sup>4</sup> C D Coulthard-Clark, *The Third Brother*, Allen & Unwin, Sydney, 1991, p.178.
- <sup>5</sup> [ADF Serials Telegraph \(adf-serials.com.au\)](http://adf-serials.com.au)
- <sup>6</sup> D N James, *Westland Aircraft since 1915*, Putnam, London, 1991, p.139.
- <sup>7</sup> Bennett, *Imperial Gift*, p.86.
- <sup>8</sup> 1AD A.50 Unit History MAR 1930.
- <sup>9</sup> Indent Order (I.O.) No. from A5 Aircraft Status Cards E/E.88.
- <sup>10</sup> From surviving A5 Aircraft Status Cards E/E.88.
- <sup>11</sup> N Parnell & T Boughton, *Flypast*, AGPS, Canberra, 1988, p.118; Coulthard-Clark, p.180.
- <sup>12</sup> Some sources claim only the first nine aircraft were Mk.IA (A5-1 to A5-9) aircraft powered by the 313kW (420hp) Bristol Jupiter VIII engines, while subsequent aircraft fitted with the more powerful 410kW (550hp) Jupiter XFA and split-axle undercarriage; *Aircraft of the Royal Australian Air Force*, Big Sky Publishing, Sydney, 2021, p.18. However, this first RAAF contract was for 28 Mk.IA Wapitis, (all bought on RAAF Overseas Indent OI.242). Ultimately these aircraft of the first batch were upgraded to this Mk.IIA standard; R J Francillon, *The RAAF & RNZAF in the Pacific*, Aero Pictorials 3, Aero Publishers, Fallbrook CA, 1970, p.4.
- <sup>13</sup> Air Board Agenda No. 1362 of 31 DEC 1929, for seven additional Wapitis and ten Jupiter VIII engines.
- <sup>14</sup> The delivery date of **A5-29** is uncertain, as no E/E.88 survives, and the date is based on *adf-serials* date of accident and W/O at Altona on 30 OCT 1929.
- <sup>15</sup> There has been discussion of whether all the Mk.V production ([J9725-19759 \(rafcommands.com\)](http://9725-19759.rafcommands.com)) actually received longer fuselages, or whether they were still the basic Mk.IIA and shipped to India. Images of this Mk.V batch do not suggest a longer fuselage on most aircraft – certainly the image of **J9728** shown is the longer variant. The Wapiti airframes modified to the later Wallace were longer. [Westland Wapiti IIA - Engine Variant Question \(See attached image\) | Key Aero](#)
- <sup>16</sup> Parnell & Boughton, pp.65-66.
- <sup>17</sup> A J Jackson, *De Havilland Aircraft since 1909*, Putnam, London, 1987, pp.267-8.
- <sup>18</sup> C F Andrews, *The Westland Wapiti, Profile No.32*, Profile Pubs, Leatherhead Surrey, 1965, p.4.
- <sup>19</sup> James, p.26.
- <sup>20</sup> Parnell & Boughton, p.66.
- <sup>21</sup> AM Sir Richard Williams, *These Are Facts*, AWM, Canberra, 1977, p.197.
- <sup>22</sup> Coulthard-Clark, p.177.
- <sup>23</sup> Williams, p.197.
- <sup>24</sup> The first Mk.IIA was from the Wapiti Mk.II batch J9237-J9247: B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester, 1987, p.55.
- <sup>25</sup> James, p.28.
- <sup>26</sup> The first flight at Laverton was recorded in the 1AD A.50 Unit History as 10 MAY 1929 by the CO, WGCDR Anderson, and this is referenced to by Parnell & Boughton, p.66. The Paul McGuinness history (<http://aircrewremembered.com/mcguinness-raaf-archive-westland-wapiti.html>) records the **Wapiti's first flight was on 9 MAY 1929 in A5-2, flown by RAF exchange officer FLTLT Smart, but – more definitively – the 1AD Unit History records the first flight on 10 MAY by A5-1 and flown by the CO! The E/E.88 for A5-1 sheds no light on this. Just as history is written by the victors, perhaps we can consider the Unit History Sheets are written by COs?**
- <sup>27</sup> Air Board Agenda No. 1362 of 31 DEC 1929, for seven additional Wapitis and ten Jupiter VIII engines – not only to replace the D.H.9A at 1FTS but also to provide two Wapiti seaplanes for training. The 'F' suffix of the engine designation indicated screwed/shrunk cylinder heads which replaced older heads which tended to leak. James, p.144. All RAAF E/E.88 Aircraft Status Cards are just annotated 'Jupiter VIII'.
- <sup>28</sup> 3SQN A.50 Unit History MAY 1929.
- <sup>29</sup> Individual aircraft histories from Paul McGuinness' history: <http://aircrewremembered.com/mcguinness-raaf-archive-westland-wapiti.html>
- <sup>30</sup> Andrews, p.9; James, p.141. Although this is quoted as 6", by mensuration it appears to be 4".
- <sup>31</sup> 3SQN A.50 Unit History 1933-1934.
- <sup>32</sup> Air Board Agenda 2069/1937, of 7 JUL 1937, approved 9 JUL 1937; NAA A14487, 11/AB/2069.
- <sup>33</sup> Robertson, p.58.
- <sup>34</sup> Whether RAF K2257, K2262, K2265, K2268 and K2287 became **A5-39 to A5-43** in numerical sequence will remain a point of conjecture, but is most probable. However [Accident Westland Wapiti IIA K2265, 21 Mar 1935 \(aviation-safety.net\)](#) records **K2265 being A5-40** from 21 FEB 1938 – sequentially it should be **A5-41**.
- <sup>35</sup> James, p.209.
- <sup>36</sup> Andrews, p.6; James, p.143.
- <sup>37</sup> Australian civil registrations changed from G-AUxx to VH-Uxx over this period, as the International Air Navigation Convention had issued different prefixes to the British Commonwealth in 1928, with a 12-month grace period to change markings. B Cookson, *The Historic Civil Aircraft Register of Australia G-AUAA to VH-UZZ*, Austairdata, Brisbane, 1996.
- <sup>38</sup> James, p.139.
- <sup>39</sup> James, p.146.
- <sup>40</sup> <http://aircrewremembered.com/mcguinness-raaf-archive-westland-wapiti.html>
- <sup>41</sup> James, p.157.
- <sup>42</sup> Jackson, p.98.
- <sup>43</sup> James, p.140.
- <sup>44</sup> Coulthard-Clark, p.425.
- <sup>45</sup> <http://aircrewremembered.com/mcguinness-raaf-archive-westland-wapiti.html>
- <sup>46</sup> Parnell & Boughton, p.69; 1SQN and 3SQN A.50 Unit Histories APR/MAY 1930.
- <sup>47</sup> [Our Journey | Air Force 100](#); 1SQN A.50 Unit History AUG/SEP 1930.
- <sup>48</sup> Parnell & Boughton, p.88.
- <sup>49</sup> RAAF Aircraft Status Card E/E.88 for A5-27. The E/E.88 records no activity from its landing mishap on 1 MAY 1936, until approval while in storage to CTC approval on 18 MAY 1939. This may not have been the case, as to accumulate 2000 flight hours (from delivery on 13 NOV 1929 until the crash in MAY 1936) in a little over six years would indeed be a Herculean feat for the day. But another scenario is if the only damage had been its stated lower mainplane, A5-27 might have been repaired and unlikely flown for the further three years from 1936 until 1939, without any record on its E/E.88.
- <sup>50</sup> Parnell & Boughton, pp.106-7.
- <sup>51</sup> Coulthard-Clark, p.428.
- <sup>52</sup> J Manning, "From Aerial Photography to Remote Sensing – A History of Aerial Photography and Space Imagery in Australia", [APhotog History \(xnatmap.org\)](#)
- <sup>53</sup> Coulthard-Clark, p.429.

- <sup>54</sup> Parnell & Boughton, p.118; Coulthard-Clark, p.429.
- <sup>55</sup> Coulthard-Clark, pp.431-432.
- <sup>56</sup> [Aerial Photographs Collection | National Library of Australia \(nla.gov.au\)](#)
- <sup>57</sup> Aircraft Status Card E/E.88 for A5-1, and <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>58</sup> Sources: NAA A9845/188 Wapiti A5 [Accidents]; RAAF Unit History Forms A.50; RAAF crash cards E/E.24; A5 Status Cards E/E.88; [Aviation Safety Network > ASN Aviation Safety WikiBase > ASN Aviation Safety Database results \(aviation-safety.net\)](#); [ADF Serials - Westland Wapiti \(adf-serials.com.au\)](#); <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>.
- <sup>59</sup> B R Walker, *Black Jack*, Banner Books, Canberra, 1994, pp.13-16.
- <sup>60</sup> I K Baker, *Aviation History Colouring Book 66, RAAF Colour Schemes & Markings Part 2*, Queenscliff Vic, 2009, p.3.
- <sup>61</sup> Designators and descriptors are from an undated document 'Synopsis of Aircraft Finishes and Sundry Paint Products', produced by BALM in Sydney, pp.1-2.
- <sup>62</sup> AHCB #66, p.3; and estimates this lighter shade as close to FS24159, or BS 639 *Light Slate Grey*, p.7.
- <sup>63</sup> BALM document, p.1.
- <sup>64</sup> I K Baker, *Aviation History Colouring Book 1, Westland Wapiti*, Melbourne, 1995, p.3.
- <sup>65</sup> NAA CRS A705/1 69/4/126 Pt.5. In addition, Air Board Agenda No.268, of 28 JUL 1922, provided similar details to amend Technical Order No.11.
- <sup>66</sup> Lucas, p.13.
- <sup>67</sup> Peter Malone in Britmodeller, 18 FEB 2021 identifies the original light blue was BESA 2.D.103 similar to *French Blue* BS381C-166, which is claimed to be K3/54 in the RAAF K5 Spec. When the darker gloss blue was introduced in the later 1930s, this was K3/171 similar to the later BS381C-110 *Roundel Blue*. The wartime RAAF roundel blue was *Dull Blue* K3/197.
- <sup>68</sup> Fuselage roundels 30" from mensuration. Wing roundels were the same as the D.H.9A, 65" in diameter; *The Imperial Gift*, p.196.
- <sup>69</sup> Lucas, pp.13, 69, 88. While the RAF "dull night flying shades" should have been implemented by British aircraft manufacturers over 1936-37, as late as SEP 1940 there is evidence some companies were still using up their stocks of *bright* colours – Glosters was one, but it is not known who the other guilty parties were!
- <sup>70</sup> Peter Malone identifies the following in Britmodeller, 18 FEB 2021: The original light blue was BESA 2.D.103 similar to *French Blue* BS381C-166, which is claimed to be K3/54 in the RAAF K5 Spec. When the darker gloss blue was introduced in the later 1930s, this was K3/171 similar to the later BS381C-110 *Roundel Blue*. The wartime RAAF roundel blue was *Dull Blue* K3/197.
- <sup>71</sup> Bennett, *Imperial Gift*, p.196.
- <sup>72</sup> [ADF-Serials Telegraph](#)
- <sup>73</sup> Cited in Tanner, p.1.
- <sup>74</sup> RAAFHQ AMEM D/DTS 1/501/329 SAS 13552 of 8 JUL 1943, specified 32" *Blue* roundel, 12" *White*, i.e. 3:8 (approx 2:5); fin flash 24" (high), 16" wide (8" each colour). The Wapiti was not specified, but the image of A5-16 appears to be 1:2 proportions (which had been adopted on other RAAF aircraft by converting RAF type-C roundels), with 30" diameter *Blue* and 15" diameter *White*.
- <sup>75</sup> *Units of the RAAF, Vol.3, Bomber Units*, p.2-3.
- <sup>76</sup> Paul McGuiness history <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>77</sup> 1AD A.50 Unit History APR/MAY 1929.
- <sup>78</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>79</sup> 1SQN A.50 Unit History OCT 1929.
- <sup>80</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>81</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>82</sup> 3SQN A.50 Unit History MAY 1929.
- <sup>83</sup> 3SQN A.50 Unit History 1935-1936.
- <sup>84</sup> *Units of the RAAF, Vol.2 Fighter Units*, p.2.
- <sup>85</sup> 3SQN A.50 Unit History JUN 1929.
- <sup>86</sup> R J Cluley, Unit Badges of the RAAF, RAAF Association Victoria, Melbourne, 1989, p.18.
- <sup>87</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>88</sup> James, p.145.
- <sup>89</sup> James, pp.151-156; Andrews, p.5.
- <sup>90</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>91</sup> Coulthard-Clark, p.419.
- <sup>92</sup> [ADF Serials Telegraph \(adf-serials.com.au\)](#)
- <sup>93</sup> AHCB #1, p.3; AHCB #43, p.18.
- <sup>94</sup> Coulthard-Clark, pp.421-424.
- <sup>95</sup> P Lucas, *Camouflage & Markings No.2*, Scale Aircraft Monographs, Guideline, Luton, Beds, 2000, p.13.
- <sup>96</sup> Lucas, p.13; implemented by AMO A.154/39 of 27 APR 1939 in J Tanner, *British Aviation Colours of World War Two*, Arms & Armour Press, London, 1986, p.1.
- <sup>97</sup> Bennett, *Imperial Gift*, p.196.
- <sup>98</sup> RAAFHQ DTS 9/1/442 of 12 SEP 1939.
- <sup>99</sup> RAAFHQ message T520, file 0947/19 (30A), of 19 SEP 1942.
- <sup>100</sup> The 1940 policy changed the M.1 roundels, in general, back to the M.2 – the only exception was for the Wirraway which retained the M.1 on upper wings. This was mandated by AGI C.11 *Issue 3* (note that *Issue 2* earlier in 1940 has been unavailable); RAAFHQ AGI C.11 *Issue 3*, of 3 OCT 1940, filed on 1/501/329.
- <sup>101</sup> B Holman, *The Militarisation of Aerial Theatre*, University of New England, Armidale NSW, 2018, p.20. The date of 19 APR 1938 is given by this State Library VIC image, but the date of **9 APR 1938** is provided by AWM image P00448.002 of a participating formation of seven 1SQN Ansons, and also by the [mcguiness](#) source.
- <sup>102</sup> <http://aircrewremembered.com/mcguiness-raaf-archive-westland-wapiti.html>
- <sup>103</sup> RAAF Preliminary Report of Flying Accident No.68 1939/40, A5-35 of 6 DEC 1939.
- <sup>104</sup> James, p.152.
- <sup>105</sup> NAA A9845/188, RAAF EDP form Aircraft Accident Data No.18/166 for A5-42 on 1 SEP 1943.
- <sup>106</sup> RAAF Aircraft Status Card E/E.88 for A5-42. The 2CRD Unit History A.50 incorrectly records on 15 AUG 1944: "Conversion [to components] commenced on Wapiti aircraft **A5-42**. This aircraft is understood to be the last Wapiti in use in the RAAF, and also the Wapiti used by GPCAPT Douglas at the South Pole." This, of course, was not the case, as **A5-16** was flying with 3AD Amberley in 1944, and possibly into 1945, not being passed to 3CRD for 'conversion' until JAN 1946. Furthermore, **A5-37** was the Wapiti taken with Douglas on the non-eventful Antarctic expedition over 1935-36.
- <sup>107</sup> *Units of the RAAF, Vol.8 Training Units*, p.100.
- <sup>108</sup> RAAF Form E/E.24 No.R.38 of 1930/31 for A5-12, 2 JUL 1930.
- <sup>109</sup> There is little recorded on Wapiti target-towing operations, but AWM image P00448.193 shows 1SQN **A5-5** at Laverton in AUG 1932 fitted for towing a sleeve target, with a 4-bladed winch to pull in the target on port interplane strut.
- <sup>110</sup> 3AD A.50 Unit History 1944-1946.
- <sup>111</sup> [adf-serials Newsletter](#) Vol.10, Issue 2, Winter 2020, pp.106-108.
- <sup>112</sup> 3CRD A.50 Unit History 30 JAN 1946.
- <sup>113</sup> NAA A11487 13/AB/2577 (series of Air Board Agenda), Agenda No. 2577/39 of 16 SEP 1939.

<sup>114</sup> *Units of the RAAF, A Concise History, Vol.8 Training Units*, AGPS, Canberra, 1995, p.36.

<sup>115</sup> [A Flight of Eagles : The Westland Wapiti in Indian Air Force Service - Bharat Rakshak:Indian Air Force \(bharat-rakshak.com\)](#)

<sup>116</sup> [A/C SERIAL NO \(rafmuseum.org.uk\)](#)

<sup>117</sup> Coulthard-Clark, p.178.

### Notes Regarding No.1 and No.2 SQN Beaufort's

<sup>118</sup> RAAF Form A50, Operations Record Book of No. 1 Squadron, entry of 1/12/43 in RAAF Unit History Sheets Number 1 Squadron Jul 25 – Feb 46; NAA: A9186, 1.

<sup>119</sup> RAAF Form A50, Operations Record Book of No. 1 Squadron, entries for Feb.1, Feb.14, Feb.17, Feb.18, Feb.19, Feb.20 and Feb.28, *ibid*.

<sup>120</sup> RAAF Form A50, Operations Record Book of No. 1 Squadron, entry of (March) 20 (1944), *ibid*.

<sup>121</sup> Air Force Headquarters Technical Order, Aircraft General Instruction, Part 3, Section (c), Instruction No.1, "Camouflage Schemes and Identification Markings" in DTS – Publication of Technical Order – Publication of Aircraft General Instruction – Part 3 – Section C – Instruction No 1 – Camouflage Schemes and Identification Markings; NAA: A705, 150/4/5056.

<sup>122</sup> Memorandum titled, "Camouflage Schemes and Identification Markings of Aircraft", dated June 28<sup>th</sup>, '44, from AOC NWA to the Air Board; 1/501/329 (174A) via John Bennett.

<sup>123</sup> Memorandum titled, "Camouflage Schemes and Identification Markings of Aircraft", dated June 28<sup>th</sup>, '44, from AOC NWA to the Air Board; 1/501/329 (174A) via John Bennett.

<sup>124</sup> AFCO A3/43 – Code Letters for Operational and Reserve Squadrons dated 4.1.43 in Air Force Confidential Orders – Series A and B – and Index, 1943; NAA: A7674, 3.

<sup>125</sup> AFCO A3/43 – Code Letters for Operational and Reserve Squadrons dated 4.1.43 in Air Force Confidential Orders – Series A and B – and Index, 1943; NAA: A7674, 3.

<sup>126</sup> Air Force Head-Quarters, Aircraft General Instruction No. C.11, Issue 3, Technical Order, Standard Aircraft Finishes, Markings, and Markings of Unit Equipment in AGI C11 Standard Aircraft Finishes Markings; NAA: A705, 150/4/852.

<sup>127</sup> Reproduced in full in Ian K Baker, *Aviation History Colouring Book No.73 – RAAF Colour Schemes & Markings, 1921-1951 Part 6b* (2011) pp13-18.

<sup>128</sup> Geoffrey Pentland, "RAAF Camouflage & Markings 1939-45 Vol 2" (1989) pp67, 87.

<sup>129</sup> Air Force Headquarters Technical Order, Aircraft General Instruction, Part 3, Section (c), Instruction No.1, "Camouflage Schemes and Identification Markings", paragraph 8 (b) and Appendices "C", "D" and "G" in DTS – Publication of Technical Order – Publication of Aircraft General Instruction – Part 3 – Section C – Instruction No 1 – Camouflage Schemes and Identification Markings; NAA: A705, 150/4/5056.

<sup>130</sup> DA/G2/18 Apr.

<sup>131</sup> ADF-Serials Telegraph, Volume 10, Issue 5, "Notes Regarding No. 13 Squadron Hudson's – Squadron Code Letters" p74.

<sup>132</sup> RAAF Form E/E.88 Record Card – Airframes, Aero Engines, Mechanical Transport & Marine Craft for A9-576 in Aircraft Status Cards Beaufort A9-500 to A9-599; NAA: A10297, BLOCK 72.

<sup>133</sup> RAAF Form E/E.88 Record Card – Airframes, Aero Engines, Mechanical Transport & Marine Craft for A9-576 in Aircraft Status Cards Beaufort A9-500 to A9-599; NAA: A10297, BLOCK 72.

<sup>134</sup> Aircraft Accident Data card for A9-576 in Beaufort A9 Accidents Part 22; NAA: A9845, 262.

<sup>135</sup> MIL/M2/16 Jun.

<sup>136</sup> Confirmatory Memorandum, Aircraft Casualty – Beaufort A9-576 in Beaufort A9 Accidents Part 22; NAA: A9845, 262.

<sup>137</sup> Confirmatory Memorandum, Aircraft Casualty Boomerang A46-125 in Boomerang A46 Accidents Part 2; NAA: A9845, 206.

<sup>138</sup> RAAF Form E/E.88 Record Card – Airframes, Aero Engines, Mechanical Transport & Marine Craft for A9-576 in Aircraft Status Cards Beaufort A9-500 to A9-599; NAA: A10297, BLOCK 72.

<sup>139</sup> RAAF Form E/E.88 Record Card – Airframes, Aero Engines, Mechanical Transport & Marine Craft for A9-576 in Aircraft Status Cards Beaufort A9-500 to A9-599; NAA: A10297, BLOCK 72.

### Winging-It with the Deltas

<sup>140</sup> This 3-tone 'Standard' camouflage scheme was applied from 1971 because of the multi-role upgrade of the Mirage III(FA), replacing the earlier 2-colour 'Lizard' scheme. P Mason & D Mottram, *Mirage III Colouring & Markings*, Mushroom Pubs, Redbourn UK, 2014, pp.73-79. Colours were British *EDSG BS-640* and *OD BS-398* (from the Canberra); now undersides became the US sourced *FS-26440 Light Gull Gray* (from the P-3B and SP-2H).

<sup>141</sup> Mason & Mottram, p.20. The fuselage roundel was reduced from the original 24" size and moved forward on the intake, so that the kangaroo did not disappear when the aux air inlet doors opened.

<sup>142</sup> DEPAIR file 410/1/261 (82) of 14 JUL 1966, and 410/1/261 20 JUL 1966 refer.

<sup>143</sup> Mason & Mottram, p.21 state 55", which is measured from the horizontal.

<sup>144</sup> An RAAF Air Force Order, c 1972, specified that tail markings were to incorporate the centre of the unit badge – accordingly 2SQN's *Red* lightning fin flash had the piping shrike/magpie added, 3SQN had the lizard replaced by its winged bomb, and 77SQN had the 'grumpy monkey' replacing the stylised '77'. Dave Robson recalls in an email of 28 JUN 2021: "My original scheme for the aircraft was the 'GT stripe'. I then chose a heraldic shield rather than standard flash. It was considered too risky to rely on hand painted or stencilled images of the Korean Lion so I opted for the simple numbers. However, I did want to feature 'Grumpy' so I repeated the shield on the nose and used a decal of grumpy. It proved difficult to make a transfer that could withstand 600 knots airspeed. The Murian transfer company in Sydney helped develop a decal with tiny perforations and we applied a clear lacquer along the leading edges. This allowed them to withstand the airflow."

### Curtiss Corner

<sup>145</sup> 40-386 CW#29 Project X 09/01/42 to X 25/02/42 [off Sumac 26/11/42](#) Condemned per Budget Report 168 Hrs TT. Delivered SS Robin Tuxworth Fremantle 07/03/42 with 41-13521\*\* etc. Accepted by RAAF as **A29-64**. Destroyed by Fire 0720hrs WST 15/05/42, flown by Act/Flt Lt D.N. Dale 4 SFTS at Geraldton WA. Aircraft caught fire on take-off and crashed landed with u/c partly retracted. Burned out. Subject may have been on un-authorized flight. Eng#337